SPECTRUM OF RENAL INVOLVEMENT IN DENGUE FEVER PATIENTS ADMITTED IN TERTIARY CARE CENTRE IN NORTH INDIA

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BY

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(MAY, 2021)

DECLARATION

I declare that the thesis entitled "**SPECTRUM OF RENAL INVOLVEMENT IN DENGUE FEVER PATIENTS ADMITTED IN TERTIARY CARE CENTRE IN NORTH INDIA**" has been prepared by me under the guidance of **DR. AMIT BERY**, Associate Professor, Department of Medicine, Dayanand Medical College and Hospital, Ludhiana. No part of this thesis has formed the basis for the award of any degree previously.

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Dedicated to

my

Family

&

Teachers

ACKNOWLEDGMENT

"As we express our gratitude, we must never forget that the Highest appreciation is not to utter words, but to live by them"

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Date ***Dr. Rajneesh Bains***

ABBREVIATIONS

DI	Dengue Infection
DVI	Dengue Viral Infection
NS1	Non Structural Protein
AKI	Acute Kidney Injury
DF	Dengue Fever
DHF	Dengue Hemorrhagic Fever
DSS	Dengue Shock Syndrome
RF	Renal Failure
RNA	Ribose nucleic Acid
ELISA	Enzyme linked Immunosorbent Assay
RT-PCR	Reverse Transcriptase Polymerase Chain Reaction
IgG	Immunoglobulin G
IgM	Immunoglobulin M
DAMA	Discharged Against Medical Advise
EIP	Extrinsic Incubation Period
PNAS	Proceedings of the National Academy of Science
TLC	total leucocyte count
WHO	World Health Organization
PCV	Packed Cell Volume

ABSTRACT

INTRODUCTION: Dengue viral infections are one of the most important mosquito borne diseases in the world, which may be asymptomatic or may occur as Dengue Fever, Dengue Hemorrhagic Fever (DHF), or Dengue Shock Syndrome (DSS). Acute Renal Failure is a rare but well recognized complication of Dengue Infection. Renal involvement is an ominous sign and is associated with prolonged hospital stay, raised morbidity and mortality of patients. Most etiologies of renal involvement can be prevented by community and at in hospital levels.

AIMS AND OBJECTIVES: To study Spectrum of Renal Involvement in Dengue Fever patients admitted in Tertiary Care Centre in north India.

MATERIAL AND METHODS: A prospective observational study conducted on admitted patients of dengue viral infection with renal involvement who presented to Dayanand Medical College and Hospital, Ludhiana from 1st jan 2019 to 31 dec, 2019 and patients were followed up at one month.

RESULTS: Total 100 patients of Dengue Viral Infection with renal manifestations were studied. Mean age of patients was 47.63±17.15 years. Out of 100 patients 68% patients were males and 32 % females. Fever was most common presenting complaint. Hyponatremia was seen in 60 % of the patients. Proteinuria was present in 73 patients, with 1 + proteinuria in 42 patients, 2+ in 23 patients & 3+ proteinuria was present in eight patients. 14 % of study population required renal replacement therapy. DHF and DSS were associated with raised mortality in our study. Patients who did not respond to conventional treatment underwent renal biopsy. Renal biopsy in all these patients was s/o Glomerulonephritis and short course of steroids were given. Out of 100 patients, 11 patients expired and 89 patients survived.

CONCLUSION: Renal manifestations of dengue fever are usually mild, but some patients may develop severe renal injury. Renal failure in complicated Dengue Viral Infection (DHF/DSS) causes significant morbidity and mortality.

KEYWORDS: Dengue Fever, Acute Kidney Injury

TABLE OF CONTENTS

S. NO.	TOPIC	PAGES
I	INTRODUCTION	1-3
II	AIMS AND OBJECTIVES	4
III	REVIEW OF LITERATURE	5-10
IV	MATERIAL AND METHODS	11
V	OBSERVATIONS AND RESULTS	12-43
VI	DISCUSSION	44-49
VII	SUMMARY AND CONCLUSION	50-51
VIII	BIBLIOGRAPHY	52-57
	APPENDICES – I - PROFORMA - MASTER CHART	
	APPENDICES – II - APPROVAL LETTER OF THESIS PLAN - THESIS PLAN	

LIST OF TABLES

TABLE. No.	Title	Page No.
1A	Age wise distribution of dengue patients with renal involvement	12
1B	Comparison of age wise distribution b/w alive and expired patients	13
2	Gender distribution of dengue patients	14
3A	Presenting symptoms in dengue fever	15
3B	Comparison of presenting symptoms among alive and expired patients	16
4	Mean duration of symptoms at presentation	18
5A	Past history of co- morbidities in dengue patients	19
5B	Comparison of past history among both groups	20
6	Systemic examination findings in patients	21
7A	Comparison of urea levels in alive and expired patients	23
7B	Creatinine level among both groups	24
8A	Sodium levels among both groups at admission and discharge	25
8B	Comparison of Potassium levels among alive and expired patients	26
9	Comparison of Proteinuria among alive and expired patients at admission and discharge	28
10	Comparison of Hematuria among alive and expired patients at admission	30
11	Other investigations in dengue patients on admission	31

12	Comparison of Capillary leakage among alive and expired patients	32
13	Comparison of complications among alive and expired patients	33
14	Treatment administered in patients	34
15	Mean duration of stay among dengue patients with renal involvement in hospital	35
16	Percentage of patients undergoing dialysis	36
17	Renal Biopsy in renal failure among dengue patients	37
18A	Urea levels on 1 month follow up	38
18B	Creatinine levels on follow up after 1 month	39
18C	Sodium levels at 1 month follow up	40
18D	Potassium levels after 1 month follow up	41
18E	Chloride levels after 1 month follow up	42
19	Mean values of RFT'S at one month follow up	43

LIST OF FIGURES

Fig. No.	Title	Page No.
1A	Age wise distribution of dengue patients with renal involvement	12
1B	Comparison of age wise distribution b/w alive and expired patients	13
2	Gender distribution of dengue patients	14
3A	Presenting symptoms in dengue fever	15
3B	Comparison of presenting symptoms among alive and expired patients	17
4	Mean duration of symptoms at presentation	18
5A	Past history of co- morbidities in dengue patients	19
5B	Comparison of past history among both groups	20
6	Systemic examination findings in patients	22
7A	Comparison of urea levels in alive and expired patients	23
7B	Creatinine level among both groups	24
8A	Sodium levels among both groups at admission and discharge	25
8B	Comparison of Potassium levels among alive and expired patients	27
9	Comparison of Proteinuria among alive and expired patients at admission and discharge	29
10	Comparison of Hematuria among alive and expired patients at admission	30
11	Other investigations in dengue patients on admission	31

12	Comparison of Capillary leakage among alive and expired patients	32
13	Comparison of complications among alive and expired patients	33
14	Treatment administered in patients	35
15	Percentage of patients undergoing dialysis	36
16	Renal Biopsy in renal failure among dengue patients	37
17A	Urea levels on 1 month follow up	38
17B	Creatinine levels on follow up after 1 month	39
17C	Sodium levels at 1 month follow up	40
17D	Potassium levels after 1 month follow up	41
17E	Chloride levels after 1 month follow up	42

INTRODUCTION

Dengue viral infections are one of the most important mosquito borne diseases in the world, which may be asymptomatic or may occur as Dengue Fever, Dengue Hemorrhagic Fever (DHF), or Dengue Shock Syndrome (DSS).

The dengue virus is a single stranded RNA virus belonging to the Flaviviridae family.[1] There are four serotypes (DEN 1–4), classified according to biological and immunological criteria. The viral genome is approximately 11 kb in length.[1] The mature virion consists of three structural (core, membrane associated, and envelope) and seven non-structural (NS1, NS2a, NS2b, NS3, NS4a, NS4b, and NS5) proteins. The envelope protein is involved in the main biological functions of the virus. It binds to receptors on host cells, allowing the virus to be transported through it. In addition, the envelope protein is associated with haemagglutination of erythrocytes, induction of neutralizing antibodies and protective immune responses.

Mosquitoes belonging to the genus Aedes (Aedes aegypti*,* Aedes albopictus*,* and Aedes polynesiensis*)* are responsible for transmission of dengue. The primary and most important vector is Ae. Aegypti*,* but Ae. Albopictus and Ae. Polynesiensis may act as vectors depending on the geographic location.[2]

Aedes aegypti, a container breeding, day biting mosquito is found in tropical and subtropical areas.[3] They reside indoors, mainly in living rooms and bedrooms. This maximizes man-vector contact and minimizes contact with insecticides sprayed outdoors, hence contributing to difficulty in controlling this vector.[4]

The dengue virus has an incubation period of 3–14 days.

DVI is associated with multiple organ dysfunction involving liver, muscles, heart, brain, and kidneys.[5]

Clinical Manifestations of Dengue Infections:

Dengue Fever

Symptoms are:

- Sudden onset high grade fever
- severe headache (especially in the retro-orbital area)
- arthralgia, myalgia ,
- anorexia, abdominal discomfort,
- And sometimes a maculopapular rash.

The fever may be biphasic and tends to last for 2–7 days

Dengue Hemorrhagic Fever

DHF is characterized by high grade fever, hemorrhagic phenomena and features of circulatory and polyserositis (pleural effusion and ascites)

WHO definition of DHF

A patient with the following four criteria:

- Acute sudden onset of high fever for 2–7 days.
- Hemorrhagic manifestations with at least a positive tourniquet test.
- Platelet count <100 × 10^9/l.
- Hemo concentration (rising PCV>20%) or other evidence of plasma leakage—for example, ascites, pleural effusions, low level of serum protein/albumin.

Dengue Shock Syndrome

Dengue shock syndrome is associated with very high mortality (around 9.3%, increasing to 47% in instances of profound shock).Severe plasma leakage leading to dengue shock syndrome is associated with cold blotchy skin, cyanosis and circulatory disturbances.

Diagnosis:

Dengue specific IgM and IgG ELISA is widely used for diagnosisand is quick and simple to perform.[6] Most patients develop IgM antibodies by the fifth day of infection. On average, they become undetectable 30–60 days after the onset of illness. Antigen capture ELISAs have also been developed. The serotype of the infecting virus can also be identified using conventional or capture ELISA.[7, 8] RT-PCR is more sensitive

than virus isolation, allows for rapid detection of dengue infections (results are usually available in 24 hours) and easier identification of the circulating serotype.[9]

Risk factors that determine the severity of the disease are age, ethnicity and possibly chronic diseases (diabetes mellitus,hypertension etc.)

The differential diagnosis for Dengue and DHF *includes* other virus diseases (human immunodeficiency virus, Hantavirus, measles, rubella, enteroviruses, influenza, hepatitis, Chikungunya virus, yellow fever, and other viral hemorrhagic fevers), bacterial (leptospirosis, meningococcemia, scarlet fever, and typhoid fever), parasitic diseases (malaria), as well as autoimmune disorders (polymyositis, dermatomyositis, and vasculitis).[10]

Dengue viral infection can involve kidneys, liver, brain and heart resulting in further deterioration of health and prolonging hospital stay and mortality. It may result in bleeding manifestations, hepato-renal syndrome, transaminitis, polyserositis (ascites, pleural effusion), cardiomyopathy and encephalopathy. In such presentations, dengue have to be differentiated from other tropical infections such as leptospirosis, scrub typhus, typhoid and chikungunya.

Acute Renal Failure is a rare but well recognized complication of Dengue Infection. Renal involvement is an ominous sign and is associated with prolonged hospital stay, raised morbidity and mortality of patients. Most etiologies of renal involvement can be prevented by community and at in hospital levels.

The aim is to study various renal manifestations such as proteinuria, hematuria, electrolyte abnormalities, glomerulonephritis, and severe acute kidney injury (AKI) because these all add up to the overall morbidity and mortality. This study will help to identify renal complications and their outcome.

AIMS AND OBJECTIVES

1. To study Spectrum of Renal Involvement in Dengue Fever patients admitted in Tertiary Care Centre in north India.
2. To study outcome in these patients after 1 month follow up.

REVIEW OF LITERATURE

Dengue fever is a debilitating viral disease of the tropics, transmitted by female mosquitoes mainly of the species Aedes aegypti and, to a lesser extent, Ae. Albopictus. Symptoms range from subclinical disease to severe flu-like symptoms in those infected. Some patients develop severe dengue with complications such as severe bleeding, organ impairment and/or plasma leakage. As discussed earlier, dengue is caused by Flaviviridae family virus and there are four closely related but distinct serotypes of virus that causes dengue (DENV-1, DENV-2, DENV-3 and DENV-4). Recovery from one virus serotype provides lifetime immunity, however cross immunity to other serotypes is only partial and temporary. DENV can be transported from one region to another by infected travelers.

Global Burden of Disease

Dengue incidence has increased dramatically around the world in recent times. Majority of patients are asymptomatic or mild, and hence the actual dengue cases are under-reported. Many cases can also be misdiagnosed as other febrile illnesses.[11] One estimate indicates 390 million dengue virus infections occur per year, of which 96 million (67–136 million) manifest clinically (with any severity of disease).[12] 70% of the actual burden of disease is in Asia, despite a risk of infection in 129 countries.[13] Dengue cases reported to WHO has increased over 8 fold over the last two decades, from 505,430 cases in 2000, to over 2.4 million in 2010, and 4.2 million in 2019.

Transmission

Mosquito-to-human transmission

Virus is transmitted to humans through the bite of infected female mosquitoes, primarily the Aedes aegypti. After feeding a dengue - infected patient, virus replicates in the mosquito midgut, and then it disseminates to secondary tissues, including salivary glands. The time it takes from ingesting the virus to actual transmission to a new host is termed the Extrinsic Incubation Period (EIP). The EIP takes about 8-12 days when the ambient temperature is between 25-28°C.[14-16] Extrinsic

incubation period variations are influenced by ambient temperature; magnitude of daily temperature fluctuations[17,18], virus genotype [19] and initial viral concentration.[20] Once infectious, the mosquito is capable of transmitting virus for the rest of its life.

Human-to-mosquito transmission

Mosquitoes can become infected from people who are viraemic with DENV. This can be someone who has a symptomatic dengue infection or someone who is asymptomatic.[21]

Human-to-mosquito transmission can occur up to 2 days before someone has symptoms of the illness[15-21] up to 2 days after the fever has resolved. [22]

Risk of mosquito infection is positively associated with high viremia and high fever in the patient, and high DENV-specific antibodies are associated with a reduced risk of mosquito infection (Nguyen et al 2013 PNAS). Most people are viremic for about 4-5 days, but viremia can last as long as 12 days.[23]

Other modes of transmission

Mosquito vectors are the primary modes of vector transmission, but there is possibility of maternal transmission (from a pregnant mother to her baby). While vertical transmission rates are less, with the risk of vertical transmission linked to the timing of the dengue infection during the pregnancy [24-27]. Dengue infected mother's babies may suffer from pre-term birth, low birth weight, and fetal distress. [28]

Vector Ecology

The Aedes aegypti mosquito, primary vector of DENV, lives in urban habitats and breeds in man-made containers. It is a day-time feeder; its peak biting periods being early morning and before sunset.[29] Female Ae. Aegypti frequently feed multiple times between each egg-laying period. [30] Eggs once laid, can remain viable for several months, and will hatch when they come in contact with water.

Aedes albopictus, a secondary dengue vector in Asia, has spread to more than 32 states in the USA, and more than 25 countries in the European Region, largely due to the international trade in used tyres (a

breeding habitat) and other goods (e.g. lucky bamboo). This vector is highly adaptive. Its geographical spread is largely due to its tolerance of colder conditions, as an egg and adult.[31,32] Aedes albopictus has been implicated as the primary vector of DENV in a limited number of outbreaks, where Aedes aegypti is either not present, or present in low numbers.[33, 34]

There are currently no vaccines. The best method of prevention is to avoid mosquito bites. Treatment is possible if diagnosis occurs before the patient develops DSS or DHF.

Symptoms can appear up to 7 days after being bitten by the mosquito that carries the virus.

Acute renal involvement in Dengue infection is typically associated with hypotension, rhabdomyolysis and hemolysis.

AKI (Acute Kidney Injury) is defined as any of the following (Not Graded):

Increase in serum Creatinine by x 0.3 mg/dl (x26.5 µmol/l) within 48 hours; Or Increase in serum Creatinine to x1.5 time's baseline, which is known or presumed to have occurred within the prior 7 days; Or Urine volume 0.5 ml/kg/h for 6 hours.

Dengue infection (DI) is a tropical illness caused by Dengue virus, with risk factors influenced by local spatial variations of rainfall, temperature, relative humidity, degree of urbanization and quality of vector control services in urban areas.

The incidence of Dengue is increasing at estimate of 50 to 100 million cases per annum worldwide.[35] The presentation of Dengue can be a classical Dengue Fever (DF) or Dengue Hemorrhagic Fever (DHF) or Dengue Shock Syndrome (DSS).[36] Acute Renal failure is a rare but well-recognized complication of Dengue, with an incidence which varies from 0.3% to 3.3% in different populations.[37] The presence of co-morbid illness like diabetes mellitus, hypertension can have impact on prognosis of DI. [37]

Dengue causes capillary leakage and loss of fluid from the intravascular compartment leading to shock which may lead to decreased kidney perfusion and acute tubular necrosis.[38,39] Other

possible etiological factors for AKI in DF include either hemolysis or rhabdomyolysis as reported in various case reports.[40-44]

In a study was conducted by Vakrani et al[37] among 101 patients with confirmed DI (dengue infection), 74 (73.3%) were men and 27(26.7%) were women with a mean age of 31.62±12.62 years. A total of 70 (70.2%) patients had classical Dengue fever, and 31(29.2%) patients had DHF/DSS. RF group with 16 (15.8%) patients was defined as serum creatinine of >1.2mg%. Most common symptoms were fever (100%) followed by headache (82%) and pain in abdomen (75%). Statistically significant ($p<0.001$) bleeding tendency, shock, proteinuria and RF were present more in DHF/DSS than in DF. Analysis by Fisher-exact test revealed that the Dengue fever group had no significant presence of hypertension, diabetes compared with the DHF/DSS group (strongly significant was if $p\leq0.01$). The time from the onset of fever to the detection of fever in DF, DHS and DSS groups did not show a significant difference. Among the 16 patients with renal failure, all patients had recovery from renal failure. The patients with DHF/DSS were more susceptible to develop renal failure compared to Dengue fever group (62% versus 38%). There were statistically significant higher frequencies of renal failure, hemoconcentration, thrombocytopenia, low serum cholesterol in DHF/DSS group. Raised transaminases, raised LDH level were noted in the DHF/DSS group compared with Dengue fever, however, there was no significant difference in frequency of other mentioned symptoms/signs and parameters like serum bilirubin, serum electrolytes, prothrombin time, APTT between Dengue fever and DHF/DSS in the patients with RF. Patients in the Renal failure group also had significantly higher percentages of shock, hemoconcentration, thrombocytopenia, raised AST and low serum cholesterol .There was no mortality and none of them had to receive renal replacement therapy during hospitalization.

A retrospective Case Series Study was conducted by Khalil et al[45] and others on acute kidney injury in dengue viral infections in 2012 at Aga Khan University Hospital Karachi, Pakistan. Data was collected from central computerized record for a period of 3 years from January

2008 to December 2010. Patients were divided into two cohorts, one who had AKI and other without AKI. They used the AKIN definition for classification of AKI Stages.[46] In this study, Out of 532 patients, two-thirds (70.9%) were males. Dengue fever was present in the majority of patients (84.4%), Dengue Hemorrhagic Fever in 76 (14.3%) patients, followed by DSS in only 7 (1.3%) patients. Seventy one (13.3%) patients had AKI. Among patients with AKI, eight patients (11.3%) died, whereas there was no mortality in patients who did not have AKI. At the time of discharge from hospital, 58 patients (81.7%) had complete recovery of renal function &only 5 (7%) continued to have renal dysfunction.

A retrospective study was conducted by Lee et al[47] in Chang Gung Memorial Hospital-Kaohsiung Medical Center, Chang Gung University College of Medicine, Kaohsiung Hsien, and Taiwan. In this study, acute renal failure (ARF) was found in 10 (3.3%) among 304 hospitalized adults with dengue hemorrhagic fever (DHF), and 6 (60%) of the 10 patients with ARF died, whereas all 294 patients without ARF (controls) survived. DHF patients with ARF were found to be significantly older ($P = 0.002$) and male predominant ($P < 0.001$). DSS (odd ratio = 220.0; $P < 0.001$) was an independent risk factor for development of ARF in DHF patients.

Kamolwish Laoprasopwattana et al [48] conducted a study on patients age <15 years during 1989 to 2007 in which DHF-causing AKI and patients with DHF with no AKI were reviewed 1:2 by age. DHF-causing AKI was clinically estimated about 0.9% (25/2893) of admissions, with high mortality rate of 64.0%. Risk factors of AKI were DHF grade IV and obesity. Respiratory failure, hepatic failure, and massive bleeding were complications found in 80.0%, 96.0%, and 84.0% of cases with AKI, respectively. Fatality was more in cases of respiratory failure, DHF grade IV, oliguric AKI, or prolongation of PTI/INR of more than twice that of normal range. Among the survivors, none developed chronic kidney disease, and creatinine levels returned back to normal in 32 (1 to 48) days.

A retrospective study was conducted by Eswarappa M et al[49] and found that, out of 231 patients 5 patients (2.16%) of dengue fever had renal manifestations, 161 patients (69%) having DHF and 65 patients (28%) having DSS had renal involvement. Proteinuria was seen in 218 patients presenting with renal manifestations. 1+ proteinuria was seen in 184 patients (84.4%), 2+ proteinuria in 19 patients (8.71%), 3++ seen in 10 patients (4.58%) and Nephrotic range proteinuria was found in 5 patients (2.29%). It was found that, out of 5 patients having nephrotic range proteinuria, 2 patients had spontaneous resolution of proteinuria: 3 patients with nephrotic range proteinuria and microscopic hematuria underwent renal biopsy, which was suggestive of proliferative and exudative glomerulonephritis in all 3 patients. A short course of steroids was given in 2 patients who had persistent nephrotic-range proteinuria after 4 weeks and 1 patient was managed conservatively as he had spontaneous decline in proteinuria by 50% at four weeks. Both patients treated with steroids had decline in proteinuria, and steroids were tapered and stopped within 6 weeks of initiation of therapy.

MATERIALS AND METHODS

This prospective study was done in the Department of Medicine, Dayanand Medical College and Hospital, Ludhiana, Punjab.

Source of Data

Adult patients of Dengue Viral Infection who had renal involvement admitted in DMCH, Ludhiana, Punjab.

METHOD OF COLLECTION OF DATA

Sample collection

Blood- collected by venipuncture taking all aseptic precautions

Venous blood (2-5 ml) was collected into a sterile container

Urine sample-to be taken in a sterile container

INCLUSION CRITERIA:

- NS1 AG positive OR dengue serology +ve(IgM)
- Urine R/E S/O proteinuria or RBC'S or rise in spot protein – creatinine ratio (If indicated)
- Absolute increase in serum creatinine of >0.3 mg /dl within 48 hours,or
- Urine volume <0.5 ml /kg/hr for 6 hours

EXCLUSION CRITERIA:

- Patient already on hemodialysis
- Already diagnosed cases of Chronic kidney disease

DATA COLLECTION:

The data was entered in the designated proforma which included the symptoms, signs, general physical examination, systemic examination and laboratory values.

STATISTICAL ANALYSIS:

The data obtained was analyzed using descriptive analysis. The chi square test was used to calculate the p vale. $P<0.05$ was taken as significant.

OBSERVATIONS AND RESULTS

TABLE 1A: Age wise distribution of dengue patients with renal involvement

In our study, most of the patients diagnosed with dengue fever who had renal involvement were in age group 41-60 years (46.0%). 34.0% patients had age <40 years and 20.0% patients had age > 60 years. In our study, mean age of patients was 47.63±17.15 years.

Age group (Years)	No. of cases	Percentage
< 40	34	34.0%
41-60	46	46.0%
> 60	20	20.0%
Total	100	100.0%

	N	Minimum	Maximum	Mean	Std. Deviation
Age	100	18.00	85.00	47.63	17.15

FIGURE 1A: Age wise distribution of dengue patients with renal involvement

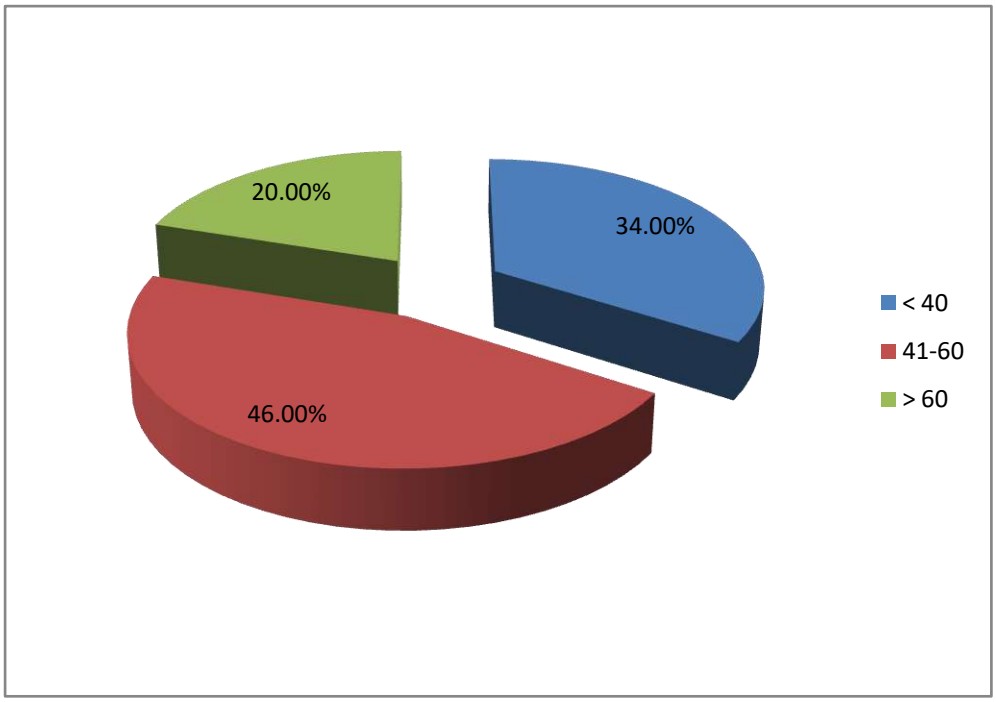


TABLE 1B: Comparison of age wise distribution b/w alive and expired patients

Out of 34 patients having age <40 years, 32 patients (36.0%) survived and 2 patients (18.2%) expired. Among patients having age 41-60 years, 40 patients (44.9%) survived and 6 patients (54.6%) died. In contrast to elderly patients having age >60 years, 17 patients (19.1%) were alive and 3 patients (27.3%) died. Most of the expired patients were in age group of 41-60 years. There was no statistical significant difference in age distribution.

		Final Outcome				**Total**	**p-value**
		Alive (n=89)		**Expired (n=11)**			
Age group (Years)	< 40	32	36.0%	2	18.2%	34	0.489
	41-60	40	44.9%	6	54.5%	46	
	> 60	17	19.1%	3	27.3%	20	

FIGURE 1B: Comparison of age wise distribution b/w alive and expired patients

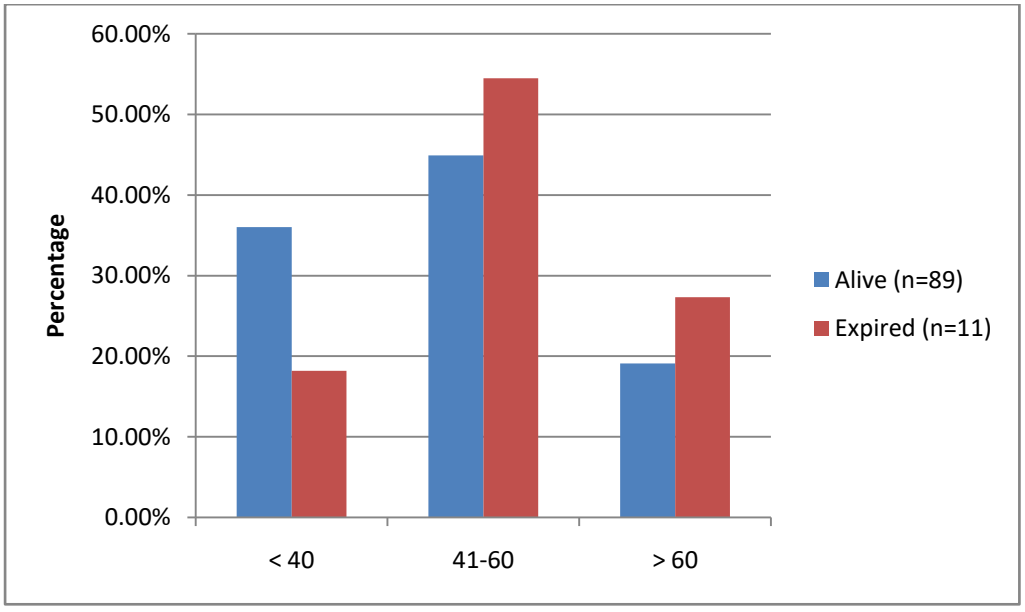


Table 2: Gender distribution of dengue patients

Out of 100 patients enrolled in the study, males were 68 and females were 32. Males were slightly higher in number but there was no statistical significant difference in gender wise distribution (p value= 0.298). Out of 32 females, 30 (33.7%) were alive and 2 female patients (18.2%) expired. Males had higher mortality as 9 (81.8%) out of 68 males expired and 59 (66.3%) males survived

		Final Outcome				**Total**	**p-value**
		Alive (n=89)		**Expired (n=11)**			
Sex	Females	30	33.7%	2	18.2%	32	0.298
	Males	59	66.3%	9	81.8%	68	

FIGURE 2: Gender distribution of dengue patients

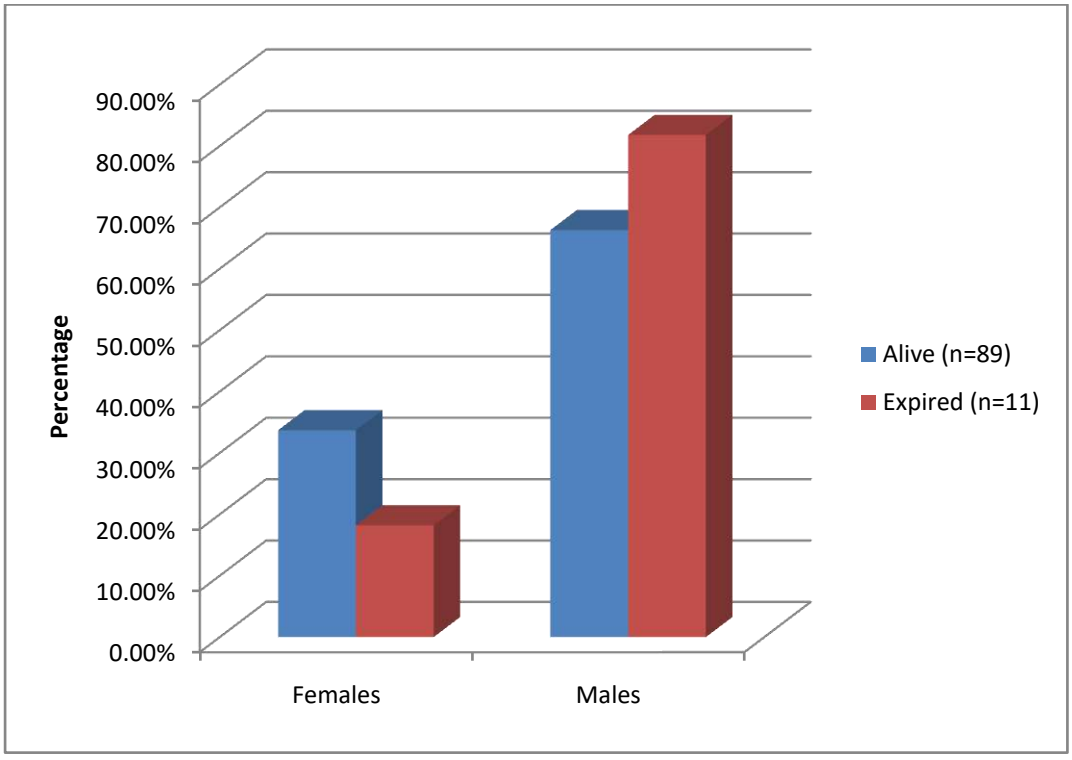


TABLE 3A: Presenting symptoms in dengue fever

In our study fever was present in all patients followed by decreased urine output which was presenting complaint among 27% patients. 24% patients had rashes on body. Black colored stools, red colored urine, and bleeding was present among 4%, 4%, and 2% patients respectively.

Symptoms	No. of cases	Percentage
Fever	100	100.0%
Black colored Stools	4	4.0%
Decreased Urinary Output	27	27.0%
Bleeding from any site	2	2.0%
Rash on body	24	24.0%
Red colored Urine	4	4.0%

FIGURE 3A: Presenting symptoms in dengue fever

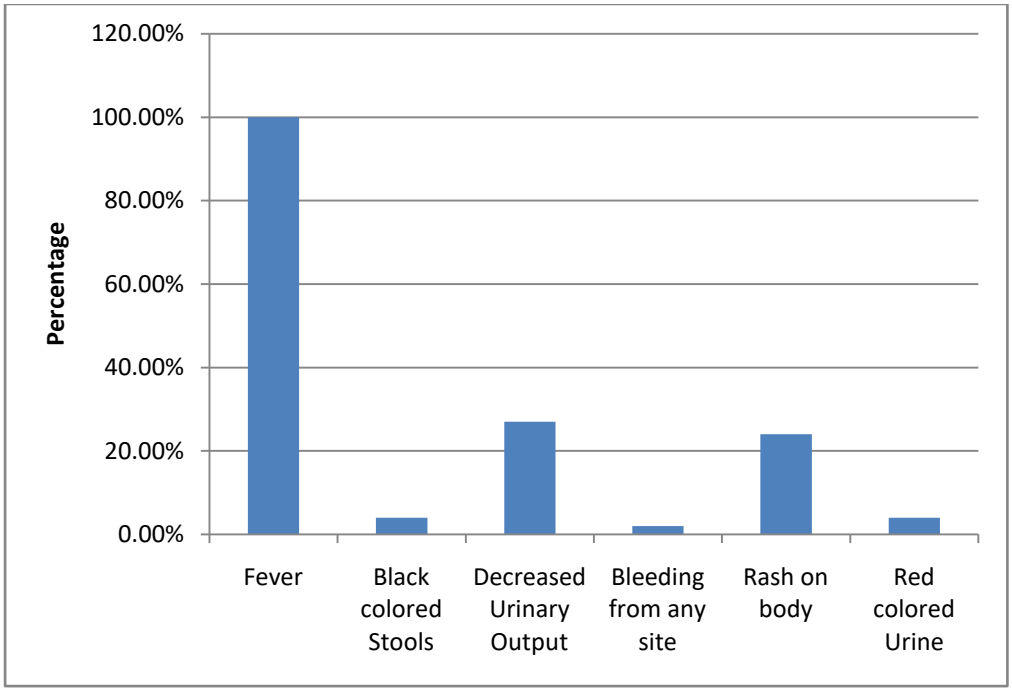


TABLE 3B: Comparison of presenting symptoms among alive and expired patients

In our study, fever was found in all alive and expired patients. Decreased urine output was present in significantly less number of patients as 16 patients (18%) of patients who survived and in 11 patients (100%) who died (p value= 0.0001). Bleeding manifestations were present in (2) 2.2% of alive patients. Rash on body was present in 20 (22.5 %) among survived patients and 4 (36.4%) among patients who died. Among alive patients 1(1.1%) patient had red colored urine in contrast to expired patients 3 (27.3%) with p value 0.004.

SYMPTOMS	**YES/NO**	**Final Outcome**				**Total**	**p-value**
		Alive (n=89)		**Expired (n=11)**			
Fever	YES	89	100.0%	11	100.0 %	100	
Black colored Stools	NO	85	95.5%	11	100.0 %	96	0.473
	YES	4	4.5%	0	0.0%	4	
Decreased Urinary Output	NO	73	82.0%	0	0.0%	73	0.0001
	YES	16	18.0%	11	100.0%	27	
Bleeding from any site	NO	87	97.8%	11	100.0%	98	0.616
	YES	2	2.2%	0	0.0%	2	
Rash on body	NO	69	77.5%	7	63.6%	76	0.309
	YES	20	22.5%	4	36.4%	24	
Red colored Urine	NO	88	98.9%	8	72.7%	96	0.004
	YES	1	1.1%	3	27.3%	4	

FIGURE 3B: Comparison of presenting symptoms among alive and expired patients

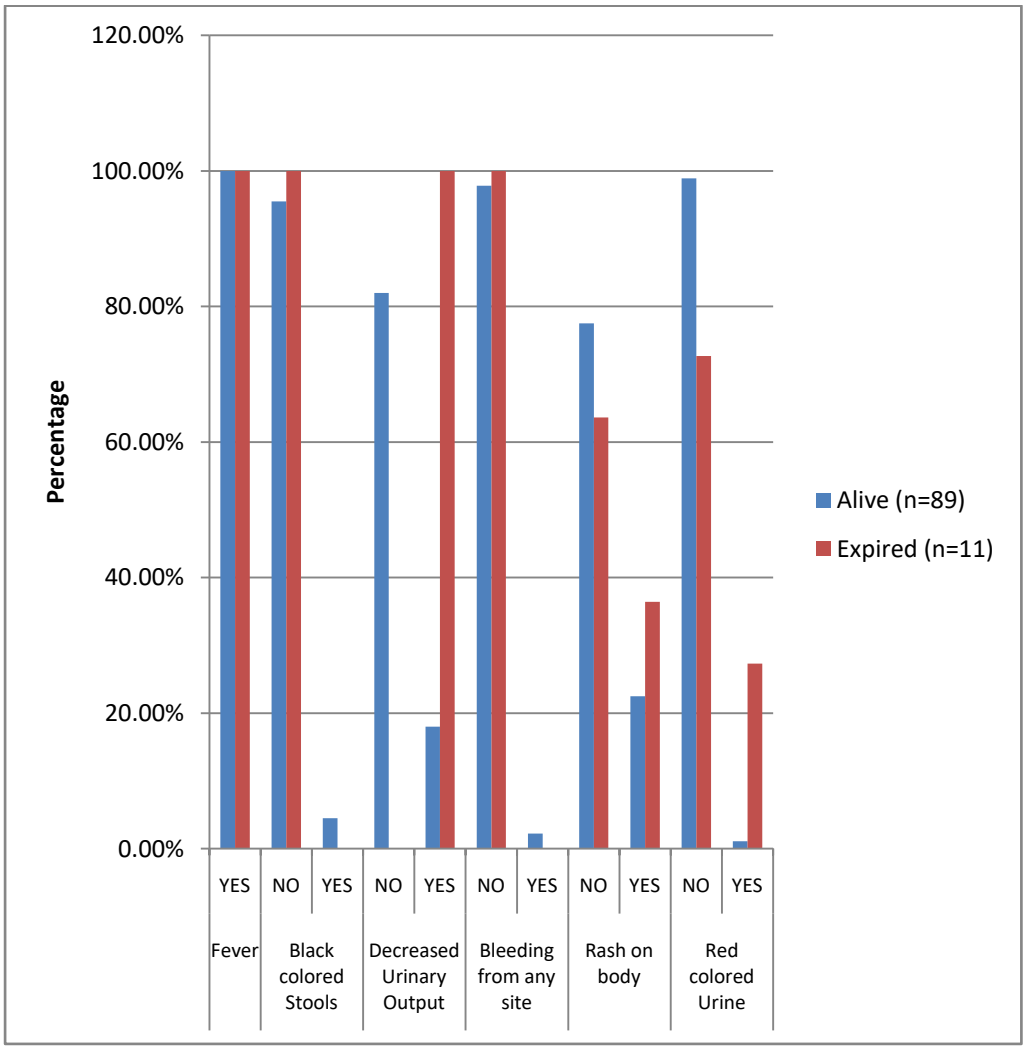


TABLE 4: Mean duration of symptoms at presentation

The table focuses on mean duration of symptoms in patients with dengue fever. In our study it was found that among all symptoms, mean duration of fever was longest (3.78±2.25 days). Mean duration of decreased urine output was 2.07±1.14 days followed by rash on body, 1.92±1.21 days. Mean duration of red colored urine was 1.25±0.50 days. Bleeding from any site and black colored stools had mean duration of symptoms of 1 day.

Duration of symptoms	No. of patients	Minimum	Maximum	Mean	Std. Deviation
Fever	100	1.00	15.00	3.78	2.25
Black colored Stools	4	1.00	1.00	1.00	0.00
Decreased Urinary Output	27	1.00	5.00	2.07	1.14
Bleeding from any site	2	1.00	1.00	1.00	0.00
Rash on body	24	1.00	5.00	1.92	1.21
Red colored Urine	4	1.00	2.00	1.25	0.50

FIGURE 4: Mean duration of symptoms at presentation

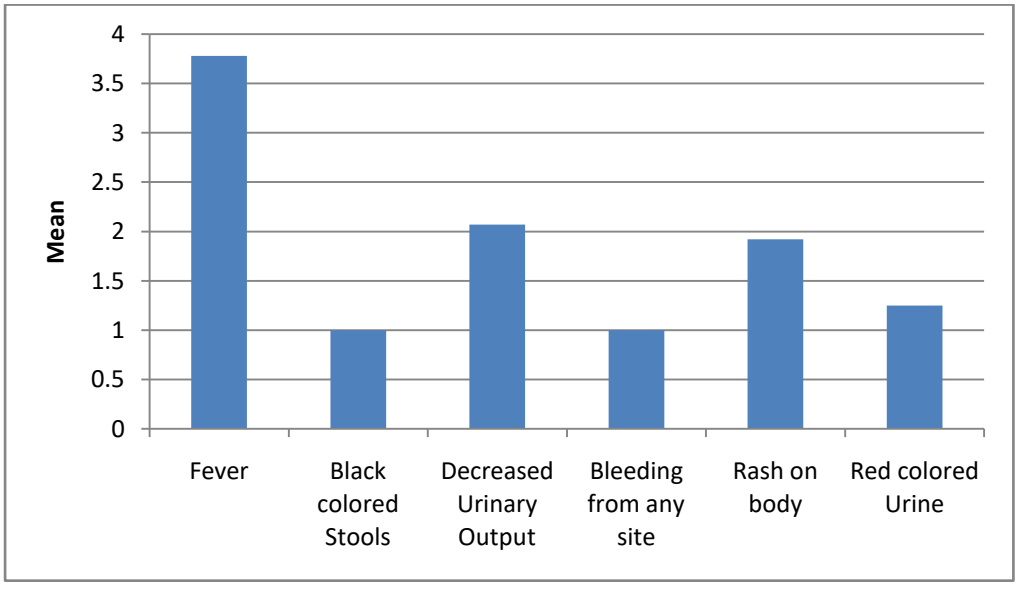


TABLE 5A: Past history of co- morbidities in dengue patients

This table focuses on past history of co–morbidities in dengue. Diabetes Mellitus II (DM-II) was present in 19 cases (19%) and hypertension (HTN) was present among 21 patients (21%)

Past History	No. of cases	Percentage
DM TYPE-2	19	19.0%
HTN	21	21.0%

FIGURE 5A: Past history of co- morbidities in dengue patients

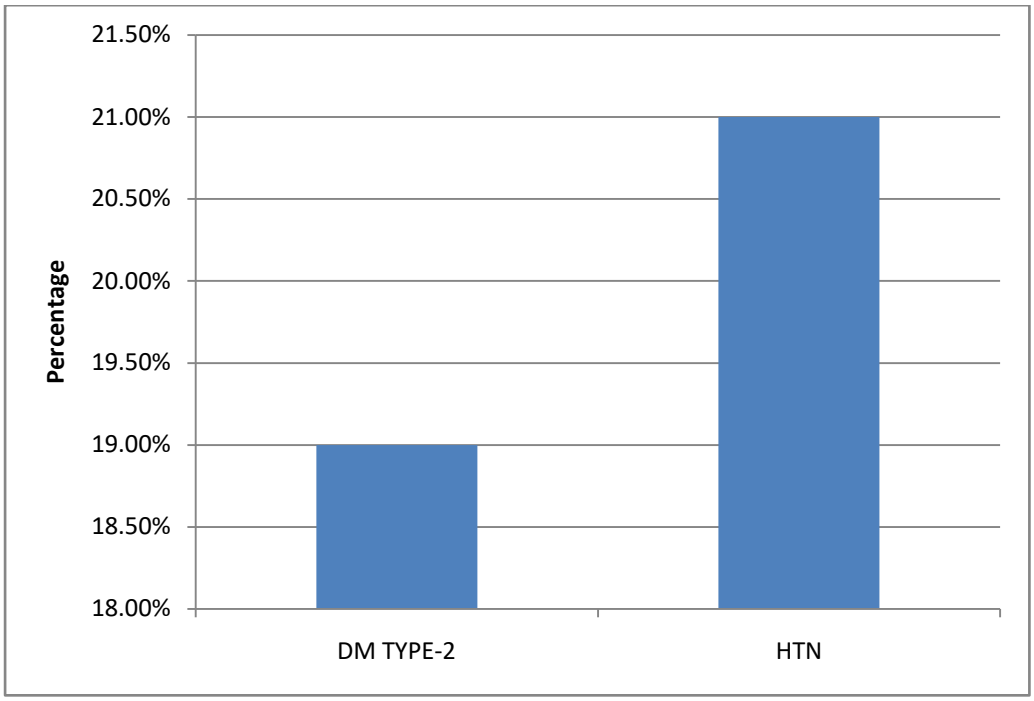


TABLE 5B: Comparison of past history among both groups

This table focuses on comparison of past history of DM II and HTN among alive and expired patient .Out of total alive patients, diabetes was present in 16 (18.0%) and out of total expired patients diabetes was present in 3 patients (27.3%). HTN was present among 17 alive patients (19.1%). Among expired patients, HTN was seen in 4 (36.4%) patients (p=0.185).

Past History	YES/NO	Final Outcome				Total	p-value
		Alive (n=89)		Expired (n=11)			
DM TYPE 2	NO	73	82.0%	8	72.7%	81	0.458
	YES	16	18.0%	3	27.3%	19	
HTN	NO	72	80.9%	7	63.6%	79	0.185
	YES	17	19.1%	4	36.4%	21	

FIGURE 5B: Comparison of past history among both groups

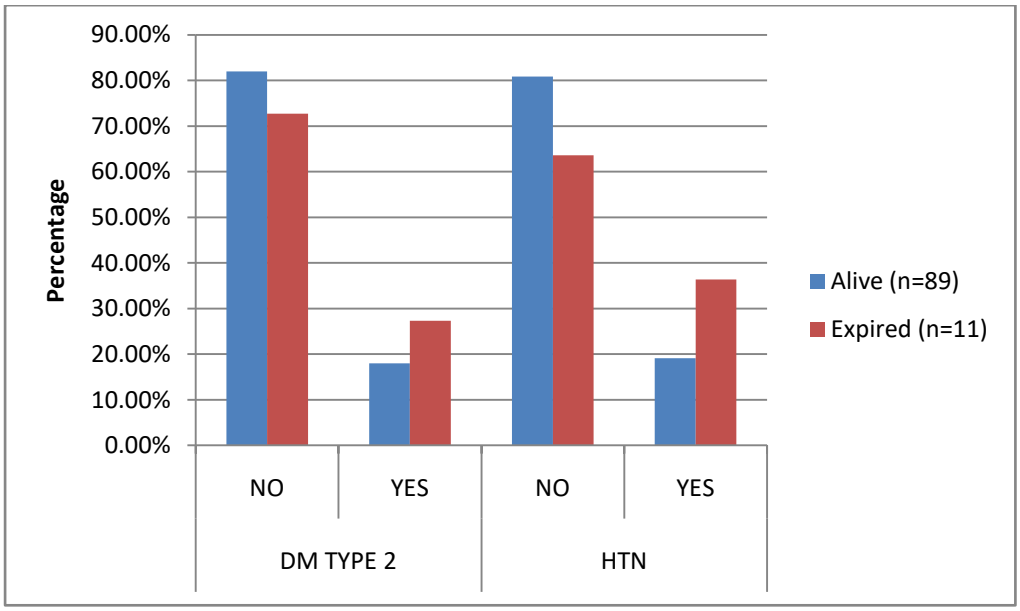


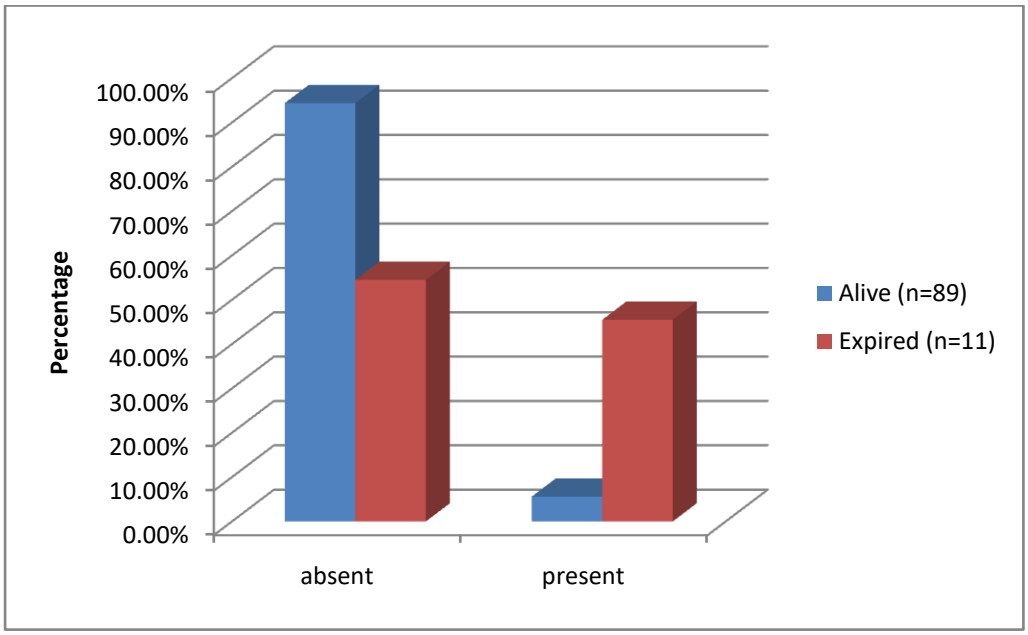
TABLE 6: Systemic examination findings in patients

Respiratory System		Final Outcome				Total	p-value
		Alive (n=89)	Alive (n=89)		Expired (n=11)		
Pulmonary Rales	absent	84	94.40%	6	54.50%	90	0.001
	present	5	5.60%	5	45.50%	10	

		Final Outcome				Total	p-value
Abdomen		Alive (n=89)	Alive (n=89)		Expired (n=11)		
Splenomegaly	absent	88	98.90%	10	90.90%	98	0.209
	present	1	1.10%	1	9.10%	2	
Free Fluid	absent	85	95.50%	6	54.50%	91	0.001
	present	4	4.50%	5	45.50%	9	

In our study, pulmonary rales were present among five (5.6%) alive patients and among 11 expired patients, pulmonary rales were present in five (45.5%) patients (p =0.001). In abdominal examination, splenomegaly was found in one (1.1%) of alive patients and was found in one patient (9.1%) among expired patients (p=0.209). Free fluid was present in four (4.5%) patients among alive patients and was present in 5 (45.5%) of expired patients (p=0.001).

FIGURE 6: Systemic examination findings in patients



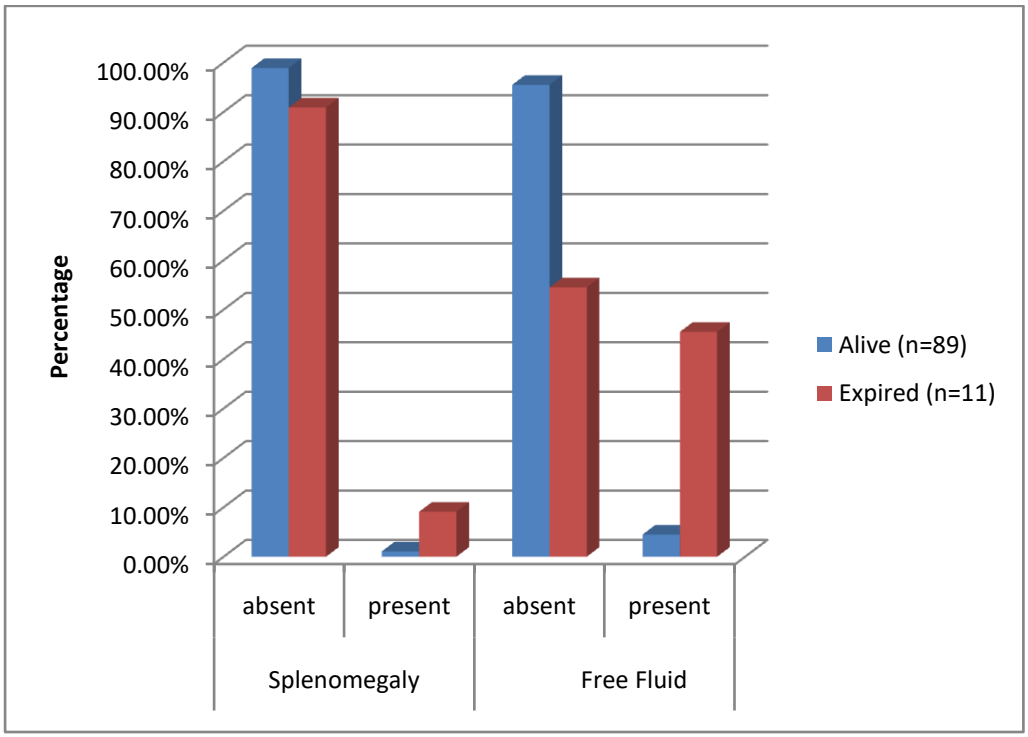


Table 7A: Comparison of urea levels in alive and expired patients

This Table compare the number and percentage of patients with elevated urea levels in alive and expired patients. At admission, among alive patients, urea levels were normal in five patients (5.6%) and elevated in 84 patients (94%), while among expired patients, urea levels were normal at admission in 3 patients (27.3%) and elevated in 8 patients (72.7%) (p value =0.041). At discharge, in alive patients, urea levels were found normal in 56 patients (62.9%).Urea levels were elevated in 33 alive patients(37.1%) at discharge and 11 patients (100%) expired (p value =0.000).

UREA		Final Outcome				Total	p-value
		Alive (n=89)		Expired (n=11)			
At admission	Normal	5	5.6%	3	27.3%	8	0.041
	Elevated	84	94.4%	8	72.7%	92	
At discharge	Normal	56	62.9%	0	0.0%	56	0.000
	Elevated	33	37.1%	11	100.0%	44	

FIGURE 7A: Comparison of urea levels in alive and expired patients

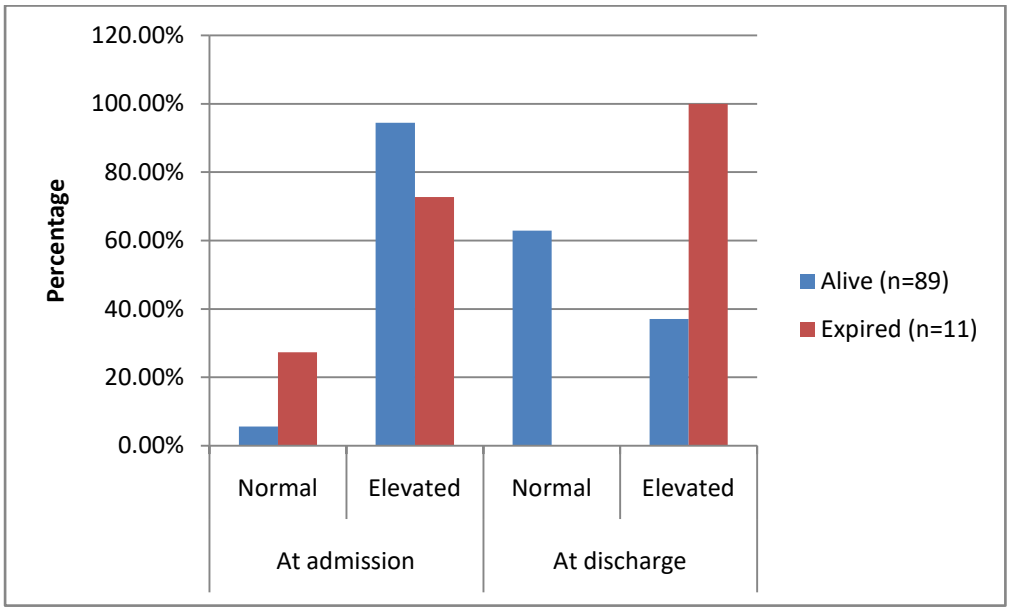


TABLE 7B: Creatinine level among both groups

In our study, serum creatinine levels were elevated in all 100 patients on admission. At discharge, among alive group, creatinine levels were normal in 40 patients (44.9%), but none of patients who got expired had normal creatinine levels. Out of 60 patients, Creatinine levels were elevated in 49 (55.1%) alive patients at discharge and among them 11 (100%) patients expired (p value =0.004).

Creatinine		**Final Outcome**				**Total**	**p-value**
		Alive (n=89)		**Expired (n=11)**			
At admission	Elevated	89	100.0%	11	100.0%	100	
At discharge	Normal	40	44.9%	0	0.0%	40	0.004
	Elevated	49	55.1%	11	100.0%	60	

FIGURE 7B: Creatinine level among both groups

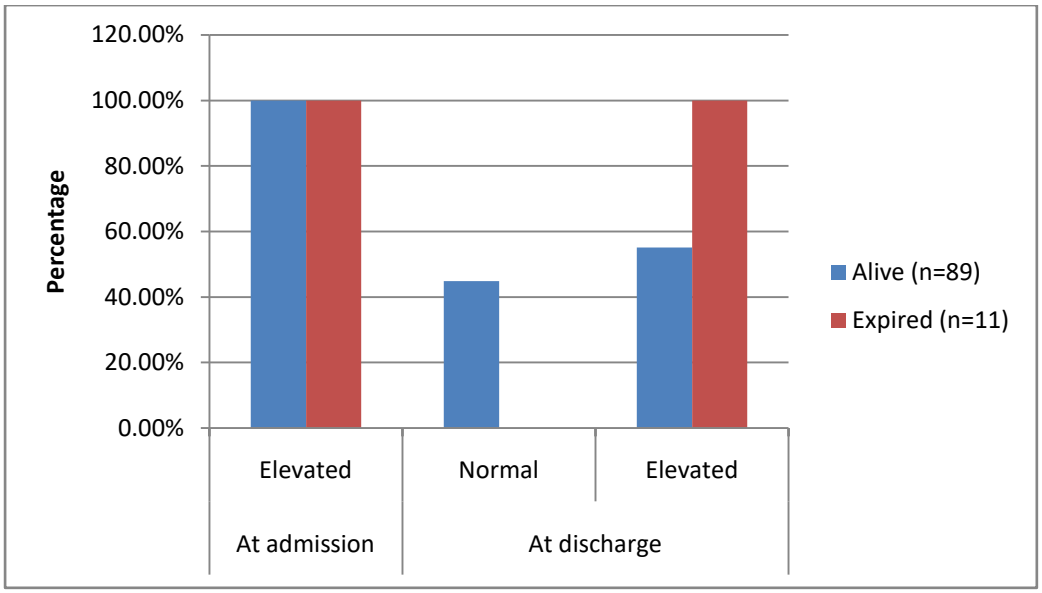


TABLE 8A: Sodium levels among both groups at admission and discharge

This table summarizes comparison between sodium levels in both alive and expired patients. On admission, 60 patients had hyponatremia, out of which 56 patients (62.9%) survived and four (36.4%) expired, 28 patients had normal sodium levels, 24 (27.0%) survived and four patients(36.4%) expired, total of 12 patients had hypernatremia, out of which 9 patients(10.1%) survived and 3 patients (27.3%) expired(p value=0.145).

At discharge, 30 patients had hyponatremia, 28 patients (31.5%) were alive and 2 patients (18.2%) expired. At discharge, 65 patients had normal sodium levels, 58 (65.2%) survived and 7 (63.6%) expired. Hypernatremia was seen in 3 patients (3.4%) at discharge and 2 patients (18.2%) expired (p=0.087).

Sodium		**Final Outcome**				**Total**	**p-value**
		Alive (n=89)		**Expired (n=11)**			
At admission	Low	56	62.9%	4	36.4%	60	0.145
	Normal	24	27.0%	4	36.4%	28	
	High	9	10.1%	3	27.3%	12	
At discharge	Low	28	31.5%	2	18.2%	30	0.087
	Normal	58	65.2%	7	63.6%	65	
	High	3	3.4%	2	18.2%	5	

FIGURE 8A: Sodium levels among both groups at admission and discharge

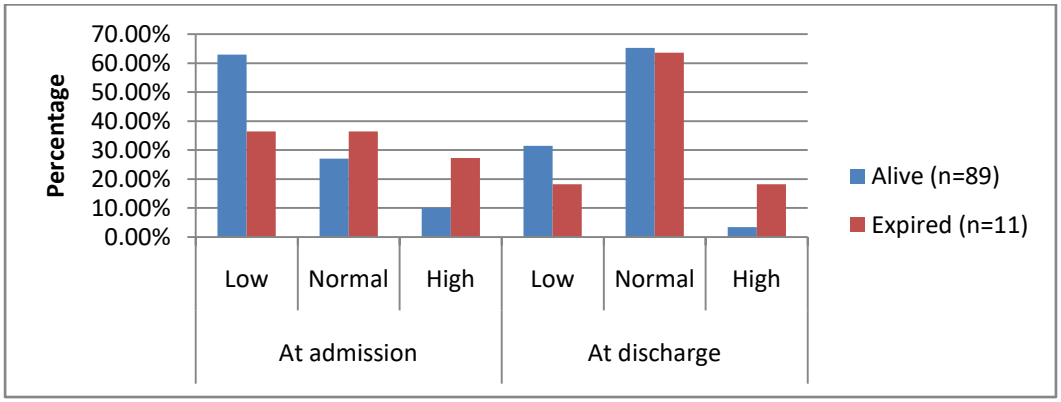


TABLE 8B: Comparison of Potassium levels among alive and expired patients

This table shows potassium levels in alive and expired patients. Out of total 24 patients having hypokalemia at presentation, 22 patients (24.7%) survived and 2 patients (18.2%) expired, normal potassium levels were seen in 47 patients, out of which 42 patients (47.2%) survived and 5 patients (45.5%) expired. On admission, high potassium levels were seen among 29 patients, 25 patients (28.1%) survived and 4 patients (36.4%) expired (p=0.814)

At discharge, hypokalemia was seen in 6 patients (6.7%), all of them survived. Normal potassium levels were seen in 83 patients at discharge, 80 patients (89.9%) survived and 3 patients (27.3%) expired. Hyperkalemia was seen in 11 patients, 3 patients were alive (3.4%) and 8 patients (72.7%) expired (p value=0.001)

Potassium		**Final Outcome**				**Total**	**p-value**
		Alive (n=89)		**Expired (n=11)**			
At admission	Low	22	24.7%	2	18.2%	24	0.814
	Normal	42	47.2%	5	45.5%	47	
	High	25	28.1%	4	36.4%	29	
At discharge	Low	6	6.7%	0	0.0%	6	0.001
	Normal	80	89.9%	3	27.3%	83	
	High	3	3.4%	8	72.7%	11	

FIGURE 8B: Comparison of Potassium levels among alive and expired patients

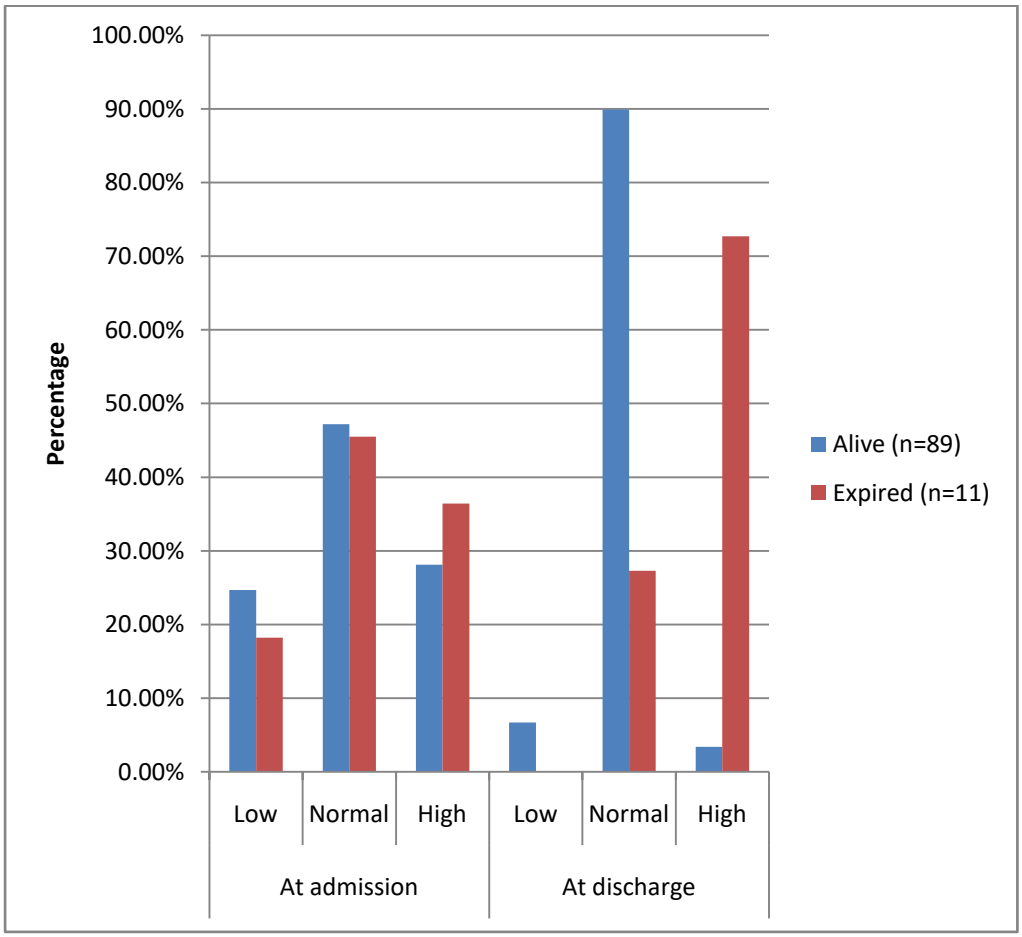


TABLE 9: Comparison of Proteinuria among alive and expired patients at admission and discharge

In this table, at admission proteinuria was seen in total 73 patients, with 1+ proteinuria in 40 patients (44.9%) survived and 2 patients (18.2%) expired. 2+ proteinuria was seen in 23 patients, out of which 20 patients (22.5%) survived and 3 patients (27.3%) expired. 3+ proteinuria was present in total of 8 patients on admission, 2 patients (2.2%) survived and 6 patients (54.5%) expired with statistically significant p value of 0.001

At discharge, there was no proteinuria in 92 patients, while 1+ proteinuria was seen in 1 alive (1.1%) and 1 expired patient (9.1%). 2+ proteinuria was found in 2(2.2%) alive patients and 3+ proteinuria was seen in 4 patients (36.4%) which expired. (p value=0.001)

Proteins		**Final Outcome**				**Total**	**p-value**
		Alive (n=89)		**Expired (n=11)**			
At Admission	No	27	30.3%	0	0.0%	27	0.001
	1+	40	44.9%	2	18.2%	42	
	2+	20	22.5%	3	27.3%	23	
	3+	2	2.2%	6	54.5%	8	
At Discharge	No	86	96.6%	6	54.5%	92	0.001
	1+	1	1.1%	1	9.1%	2	
	2+	2	2.2%	0	0.0%	2	
	3+	0	0.0%	4	36.4%	4	

FIGURE 9: Comparison of Proteinuria among alive and expired patients at admission and discharge

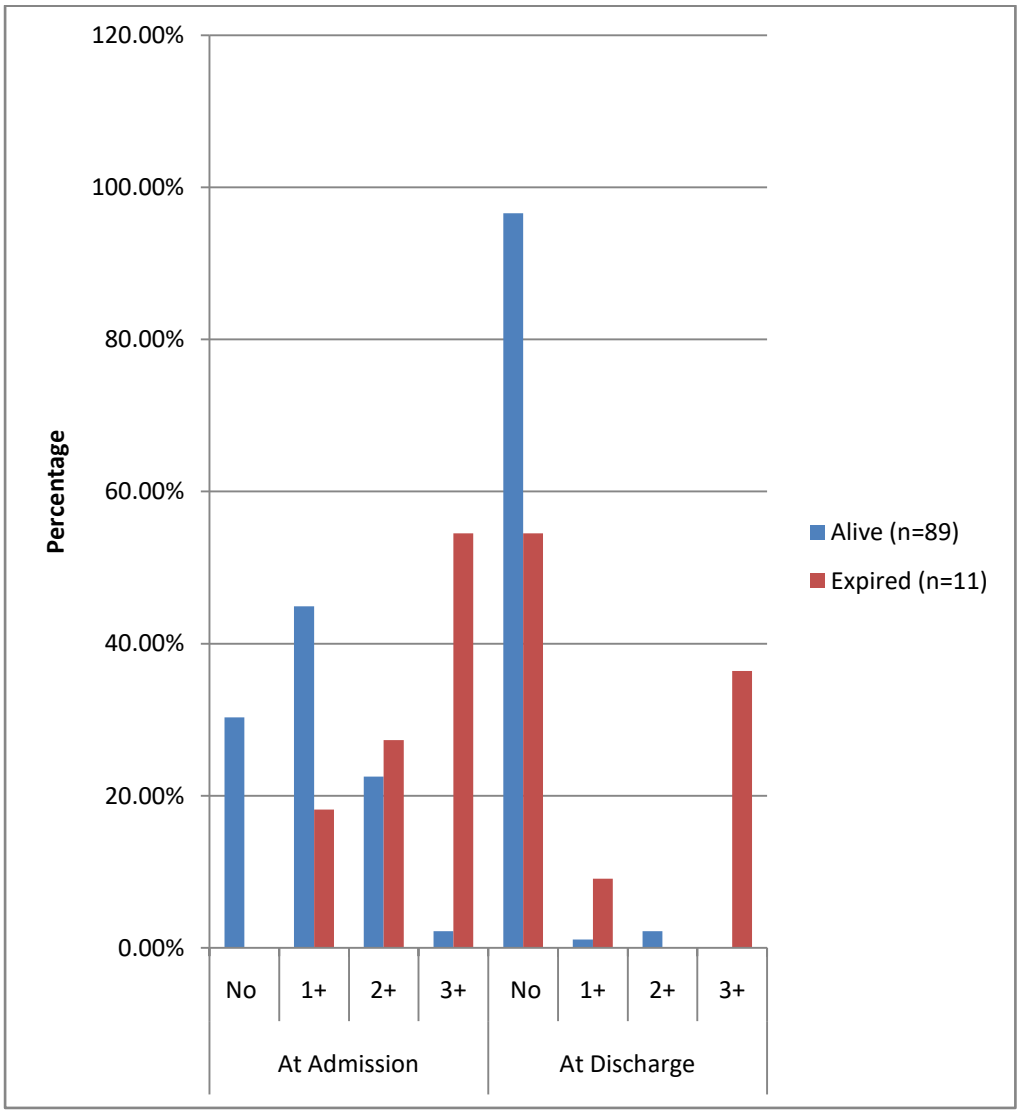


TABLE 10: Comparison of Hematuria among alive and expired patients at admission

RBC's were seen in 38 patients, 27 patients (30.3%) were alive and 11 patients (100%) expired with statistically significant p value of 0.001

RBC's IN URINE		Final Outcome				Total	p-value
		Alive (n=89)		Expired (n=11)			
At Admission	NO	62	69.7%	0	0.0%	62	0.001
	YES	27	30.3%	11	100.0%	38	

FIGURE 10: Comparison of Hematuria among alive and expired patients at admission

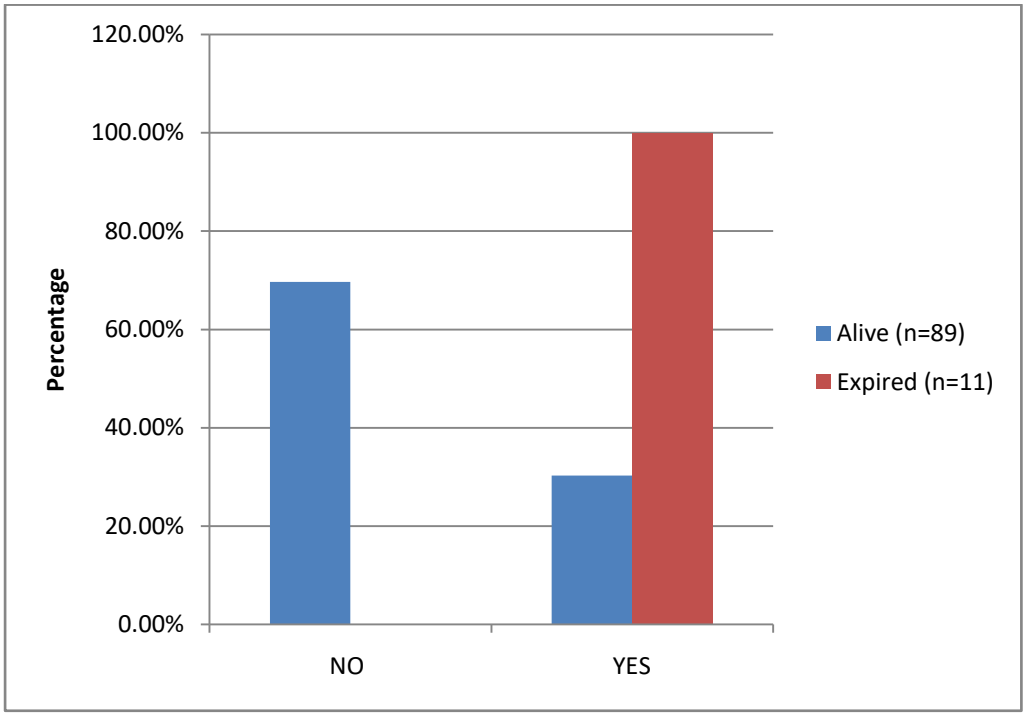


Table 11: Other investigations in dengue patients on admission

In this table, various other investigations and their mean values were compared. Mean hemoglobin levels were (11.59±2.56) gm/dl. Mean TLC levels were (10.83±7.05) $10^*3/\mu l$, mean platelet counts were (50.51±43.40) $10^*3/\mu l$, mean PCV of (44.78±5.56) %, mean PTI values were (14.34±6) sec, mean INR levels were 1.31±0.47.

At admission	N	Minimum	Maximum	Mean	SD
Hb (gm/dl)	100	5.8	19	11.59	2.56
TLC ($10^*3/\mu l$)	100	1.3	36	10.83	7.05
PLT($10^*3/\mu l$)	100	6	231	50.51	43.4
PCV (%)	100	32.4	58.2	44.78	5.56
PTI (sec)	98	9.1	60	14.34	6
INR	98	0.8	4.99	1.31	0.47

FIGURE 11: Other investigations in dengue patients on admission

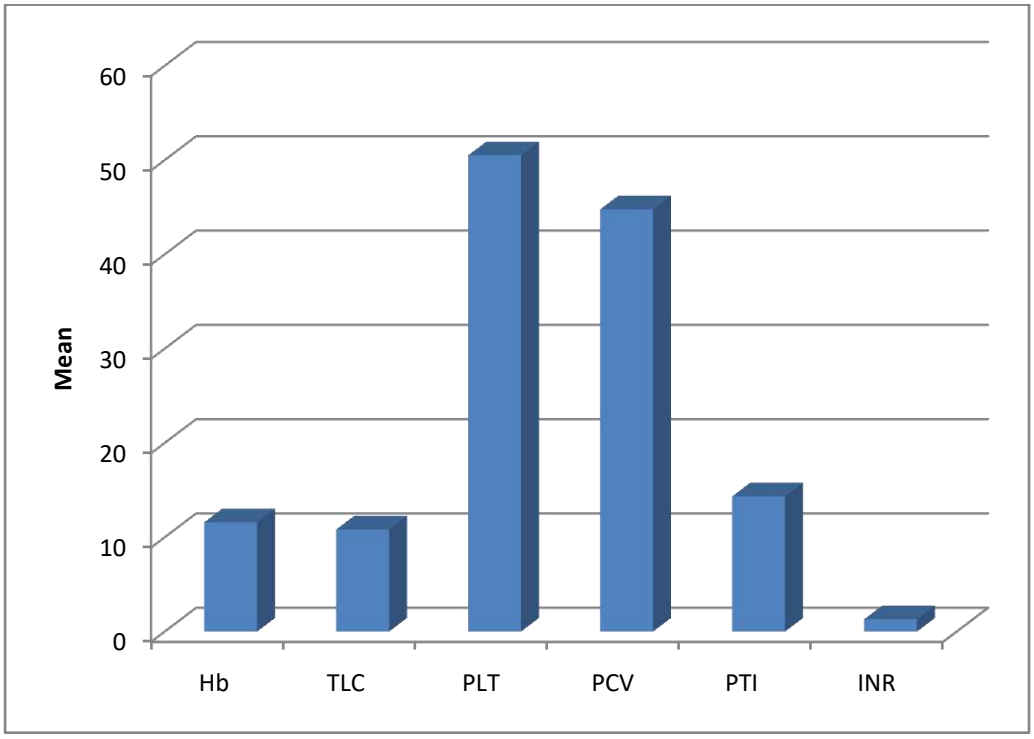


TABLE 12: Comparison of Capillary leakage among alive and expired patients

This table shows capillary leakage, which was seen in 48 patients, 39 patients (43.8%) survived and 9 patients (81.8%) expired, however out of 52 patients who did not have capillary leakage, 50 patients (56.2%) survived and only 2 patients (18.2%) expired (p value =0.017).

		Final Outcome				Total	p-value
		Alive (n=89)		Expired (n=11)			
Capillary leakage	NO	50	56.2%	2	18.2%	52	0.017
	YES	39	43.8%	9	81.8%	48	

FIGURE 12: Comparison of Capillary leakage amongalive and expired patients

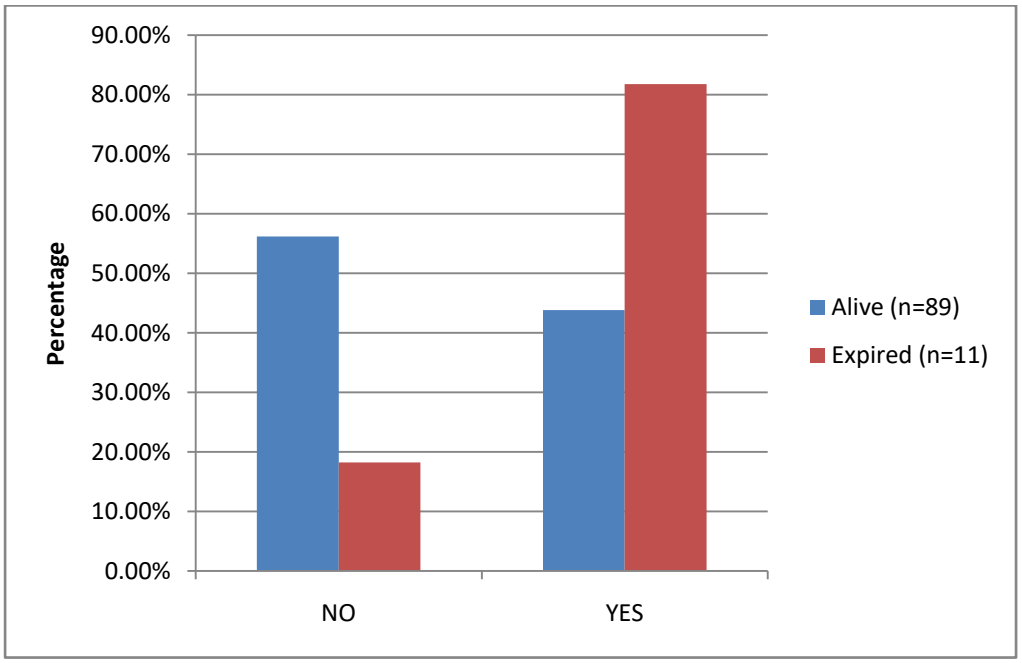


TABLE 13: Comparison of complications among alive and expired patients

In our study it was found that DHF was seen in 45 patients, 37 patients (82.2%) survived and 8 patients (17.8%) expired (p=0.061). DSS was seen in 11 patients, 3 patients (27.3%) survived and 8 patients (72.7%) expired (p value =0.001).

COMPLICATIONS		Final Outcome				Total	p-value
		Alive (n=89)	Alive (n=89)		Expired (n=11)		
DHF	NO	52	94.5%	3	5.5%	55	0.061
	YES	37	82.2%	8	17.8%	45	
DSS	NO	86	96.6%	3	3.4%	89	0.001
	YES	3	27.3%	8	72.7%	11	

FIGURE 13: Comparison of complications among alive and expired patients

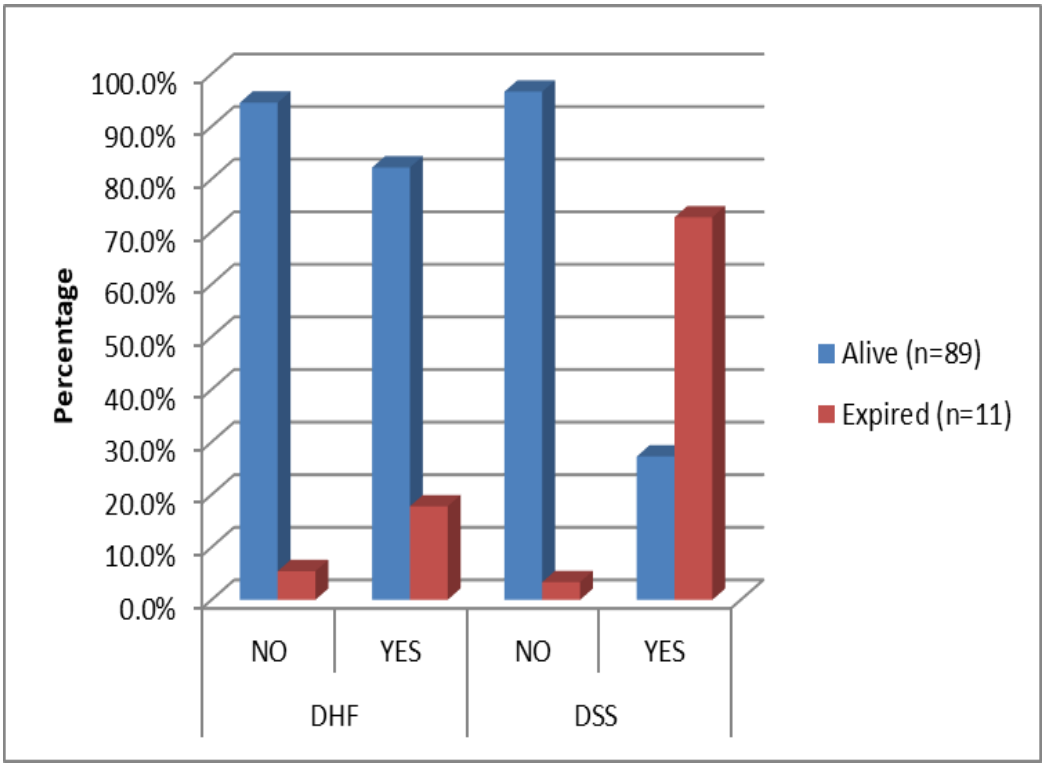


TABLE 14: Treatment administered in patients

This table highlights treatment given to patients. Intravenous fluids were given to 96 patients, out of which 10 patients (90.9%) expired. Inotropic support was given in 13 patients having shock, out of which 9 patients (81.8%) expired and 4 patients (4.5%) survived and inotropic support was not given in 87 patients, out of which 85 patients (95.5%) survived and 2 patients expired (18.2%), p value was statistically significant (0.001). Dialysis was required in total 14 patients, 5 (5.6%) of them survived and 9 patients (81.8%) expired, p value =0.001. 3 patients (3.4%) were given steroids (p value=0.536). Platelet transfusion was done in total of 25 patients, 21 patients (23.6%) survived and 4 patients (36.4%) expired, p value was not significant (p=0.356)

		Final Outcome				**Total**	**p-value**
		Alive (n=89)		**Expired (n=11)**			
IV FLUIDS	N	3	3.4%	1	9.1%	4	0.361
	Y	86	96.6%	10	90.9%	96	
ANTIBIOTICS	Y	89	100.0%	11	100.0%	100	
INOTROPES	N	85	95.5%	2	18.2%	87	0.001
	Y	4	4.5%	9	81.8%	13	
DIALYSIS(IF INDICATED)	N	84	94.4%	2	18.2%	86	0.001
	Y	5	5.6%	9	81.8%	14	
STEROIDS	N	86	96.6%	11	100.0%	97	0.536
	Y	3	3.4%	0	0.0%	3	
PLATELETTRANSFUSION	N	68	76.4%	7	63.6%	75	0.356
	Y	21	23.6%	4	36.4%	25	

FIGURE 14: Treatment administered in patients

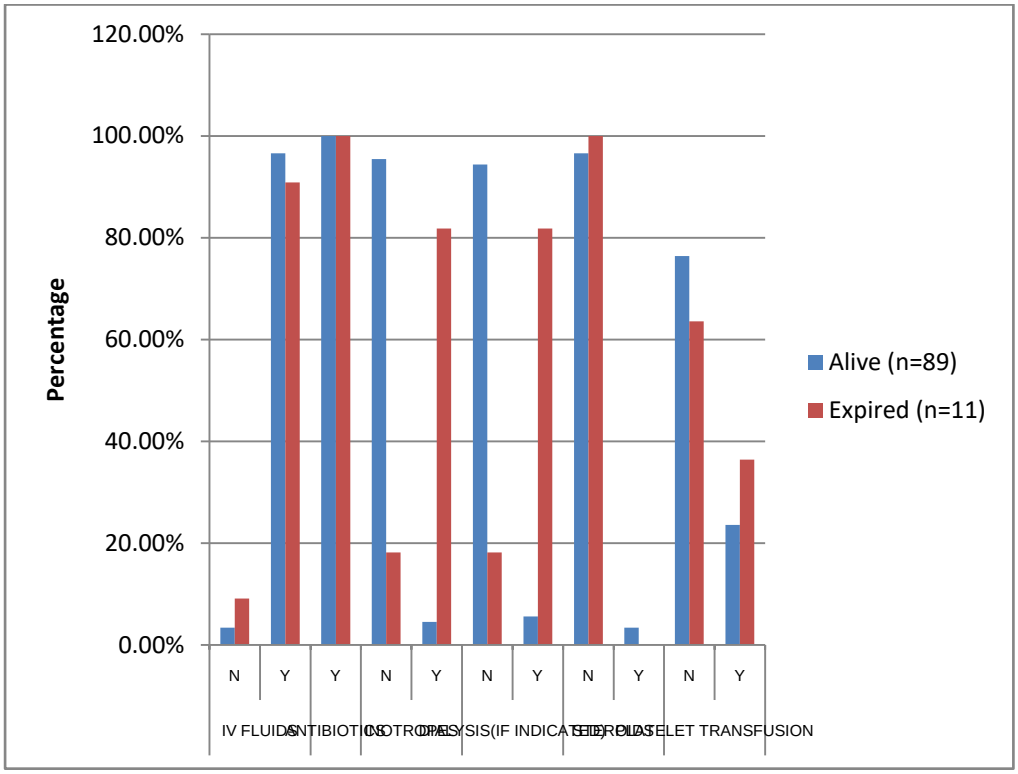


TABLE 15: Mean duration of stay among dengue patients with renal involvement in hospital

Maximum duration of stay in our study was 20 days and minimum stay of 3 days with mean duration of stay of 7.60±3.63

		Minimum	Maximum	Mean	Std. Deviation
Duration of Stay in Hospital	99	3.00	20.00	7.60	3.63

TABLE 16: Percentage of patients undergoing dialysis

This table shows patients who underwent various renal replacement therapies. Hemodialysis was done in 5 patients (35.7%), CRRT was done in 3 patients (21.4%), SLED and CRRT were done in 2 patients (14.3%), peritoneal dialysis was required in 3 patients (21.4%), and SLED was done in 1 patient (7.1%).

DIALYSIS(IF INDICATED)	No. of cases	Percentage
CRRT	3	21.4%
HD	5	35.7%
SLED,CRRT	2	14.3%
PD	3	21.4%
SLED	1	7.1%

FIGURE 16: Percentage of patients undergoing dialysis

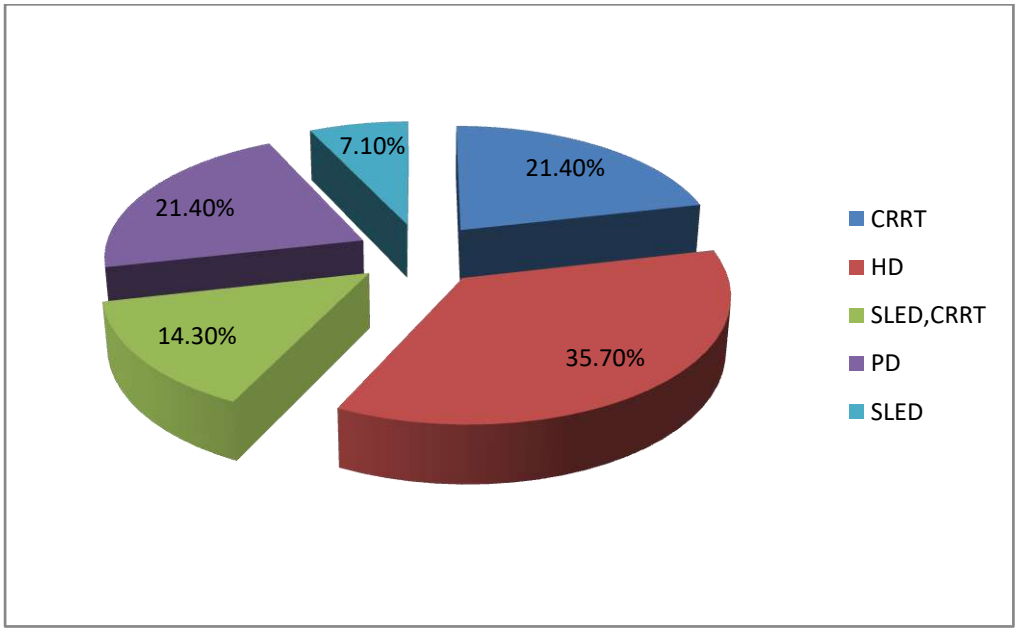


TABLE 17: Renal Biopsy in renal failure among dengue patients

Renal Biopsy was done in 3 patients (3%) out of 100.

Biopsy done	No. of cases	Percentage
Yes	3	3.0%
No	97	97.0%
Total	100	100.0%

FIGURE 17: Renal Biopsy in renal failure among dengue patients

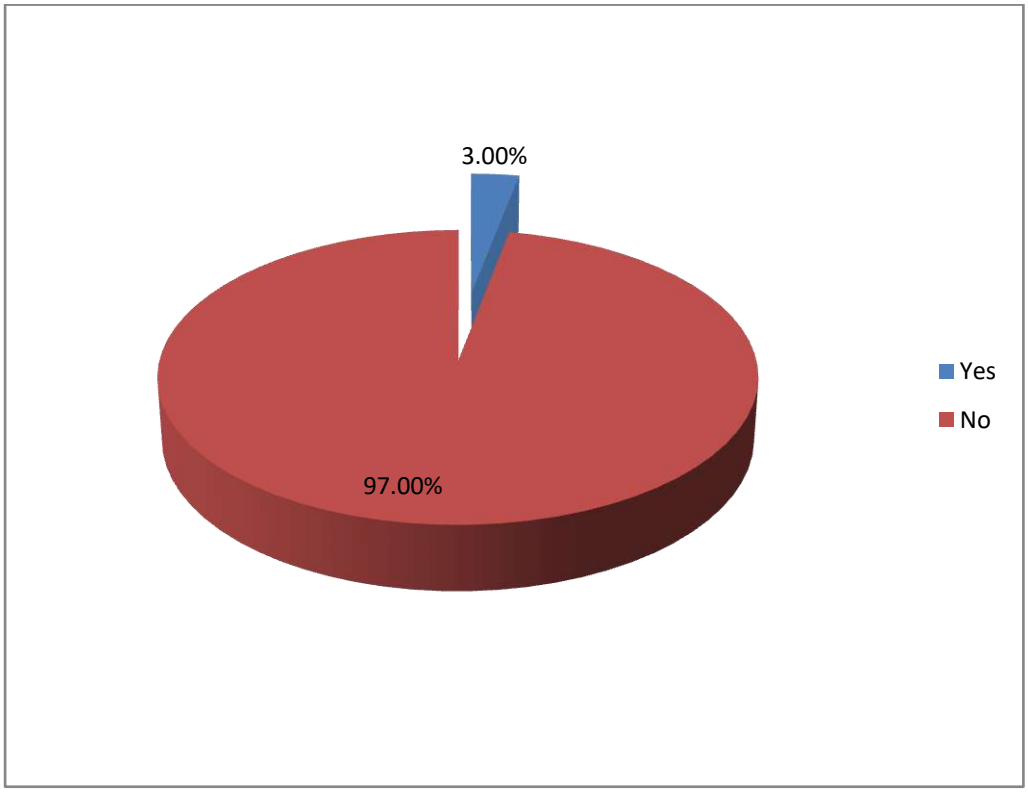


Table 18A: Urea levels on 1 month follow up.

Focuses on urea levels after 1 month follow-up. Urea levels were normal in 81 patients (91%) and abnormal/raised in 8 patients (9.0%) on follow up.

UREA after 1 month	No. of cases	Percentage
Normal	81	91.0%
Abnormal	8	9.0%
Total	89	100.0%

FIGURE 18A: Urea levels on 1 month follow up.

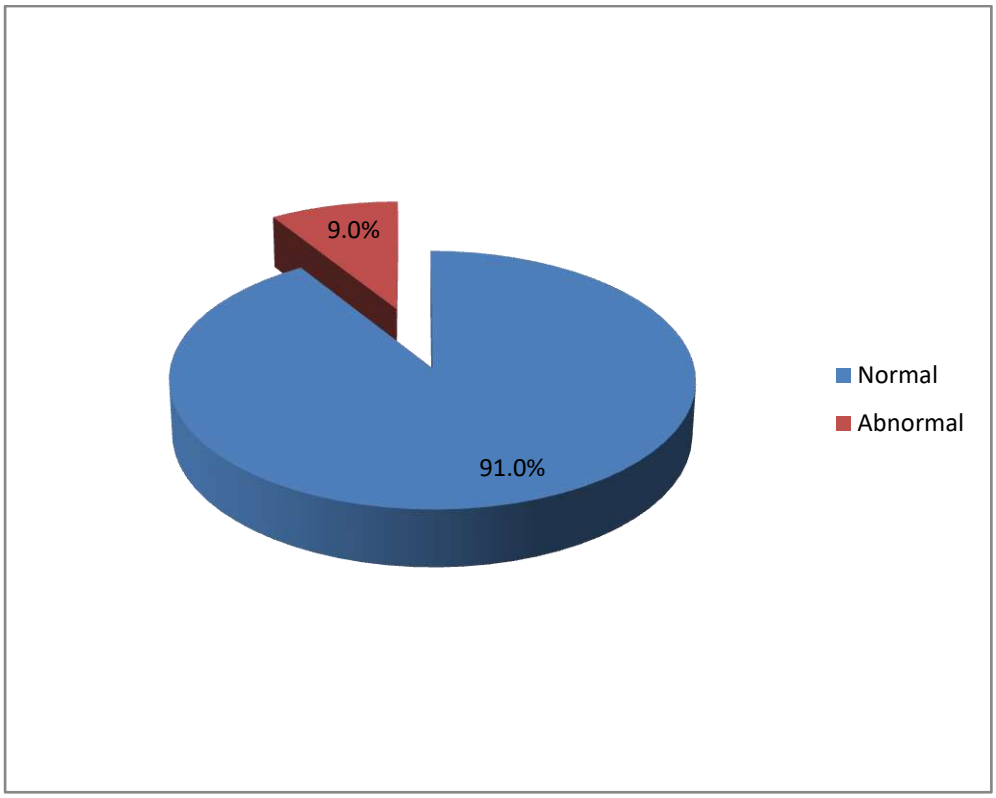


TABLE 18B: Creatinine levels on follow up after 1 month.

This table focuses on creatinine levels on 1 month follow up. Out of 89 survived patients, 79 (88.8%) had normal creatinine values and 10 patients (11.2%) had elevated creatinine levels.

Creatinine at 1 month	No. of cases	Percentage
Normal	79	88.8%
Abnormal	10	11.2%
Total	89	100.0%

FIGURE 18B: Creatinine levels on follow up after 1 month

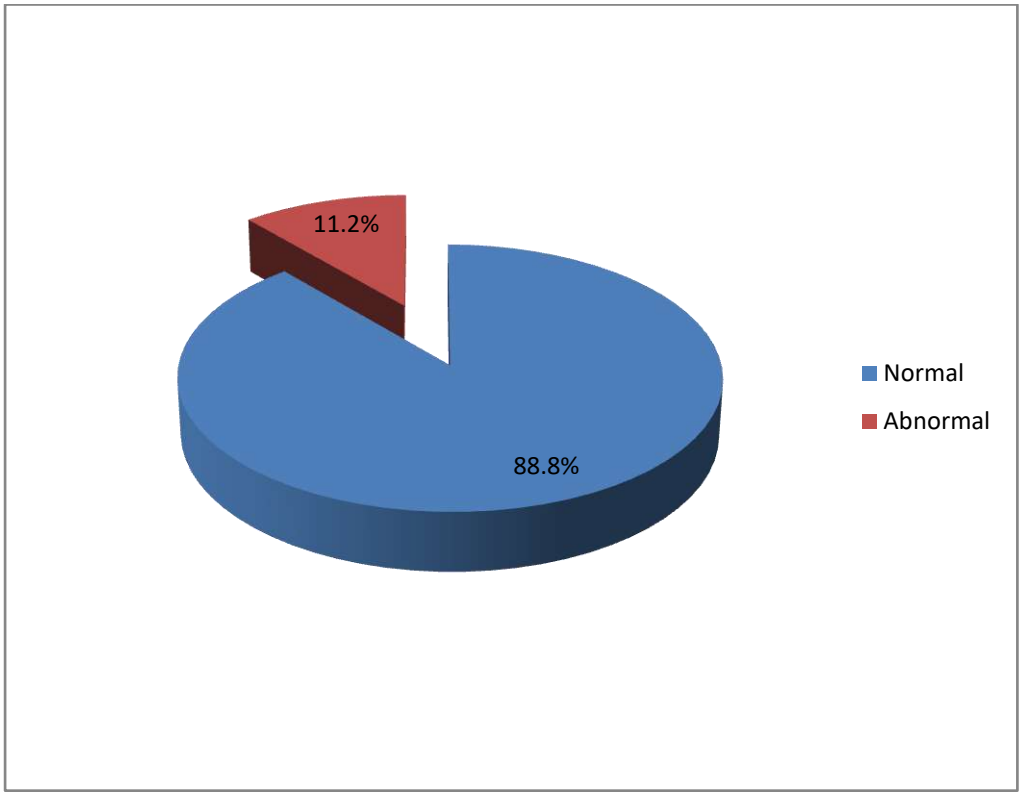


TABLE 18C: Sodium levels at 1 month follow up.

Highlights sodium levels on 1 month follow up. Sodium levels were low in 8 patients (9%) and normal in 81 patients (91%).

Sodium at 1 month	No. of cases	Percentage
Low	8	9.0%
Normal	81	91.0%
Total	89	100.0%

FIGURE 18C: Sodium levels at 1 month follow up

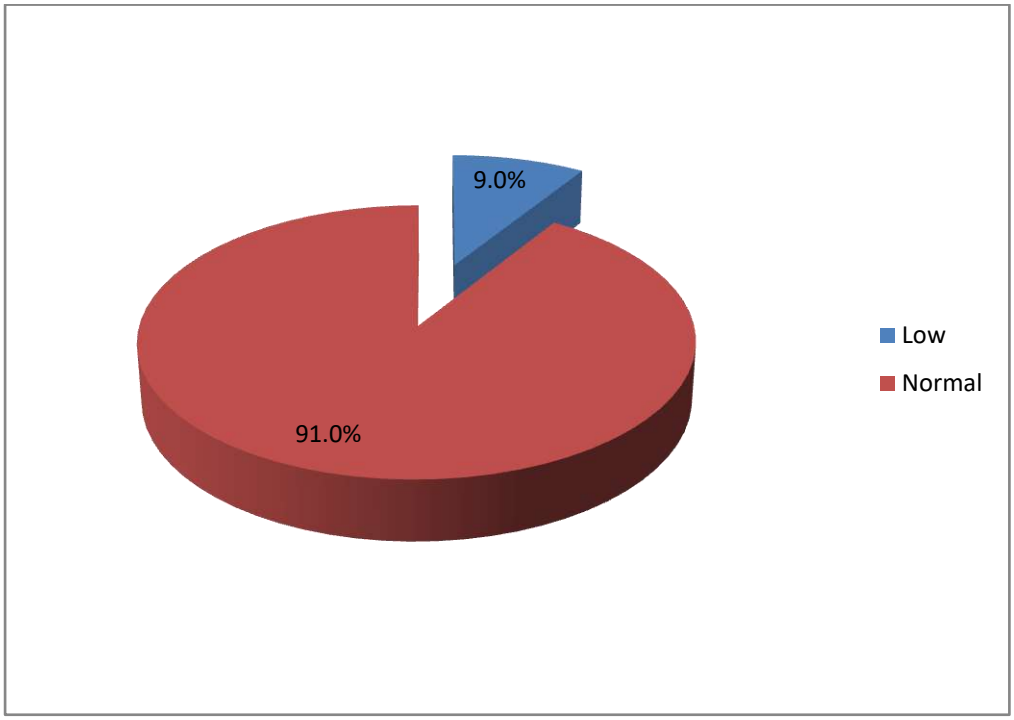


TABLE 18D: Potassium levels after 1 month follow up.

This table highlights potassium levels at 1 month follow up. Potassium levels were within normal range in 88 patients (98.9%) and abnormal in 1 patient (1.1%)

Potassium at 1 month	No. of cases	Percentage
Normal	88	98.9%
Abnormal	1	1.1%
Total	89	100.0%

FIGURE 18D: Potassium levels after 1 month follow up.

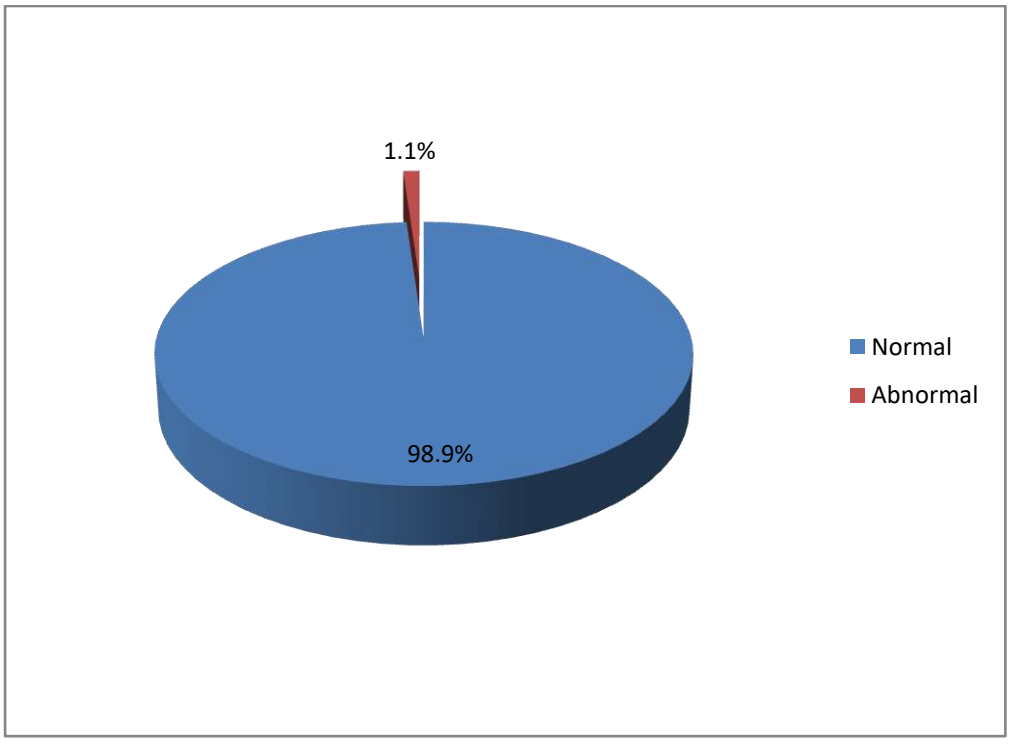


TABLE 18E: Chloride levels after 1 month follow up.

This table focuses on chloride levels on follow up. Normal chloride levels were found in 83 patients (93.3%) and abnormal levels were seen in 6 patients (6.7%).

Chloride at 1 month	No. of cases	Percentage
Normal	83	93.3%
Abnormal	6	6.7%
Total	89	100.0%

FIGURE 18E: Chloride levels after 1 month follow up.

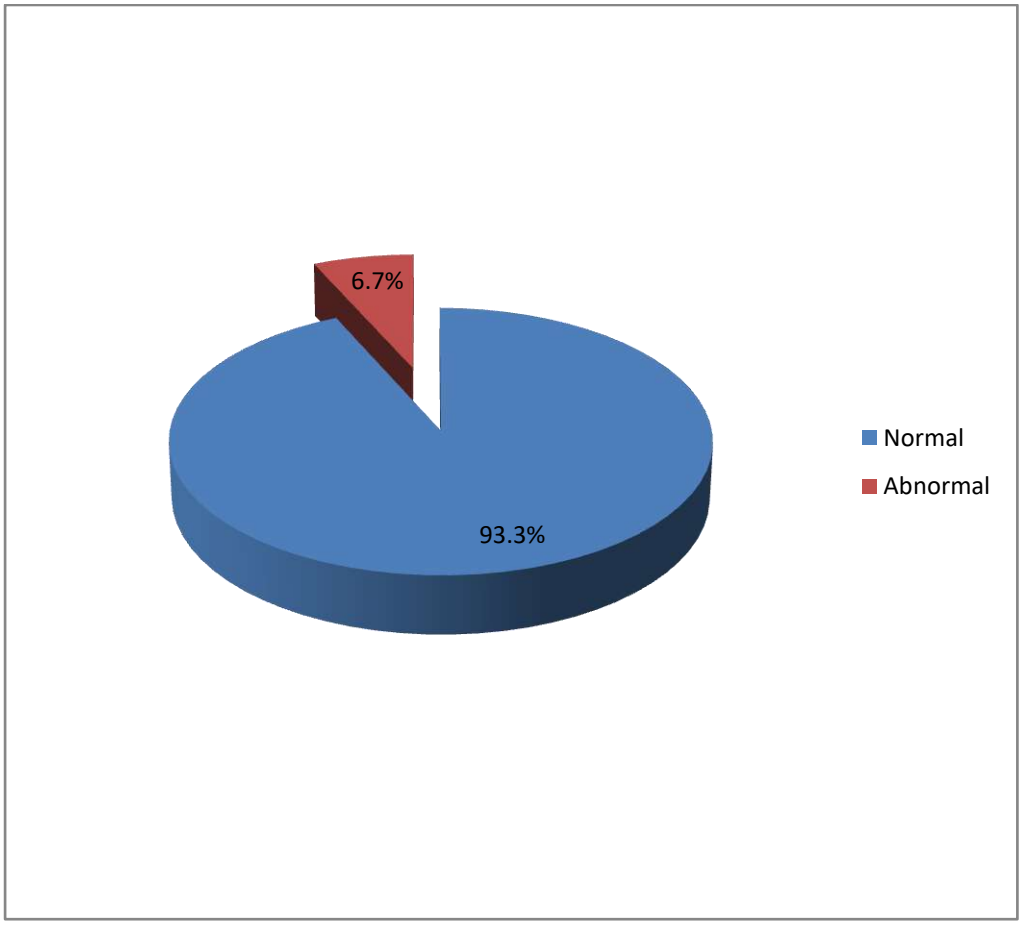


TABLE 19: Mean values of RFT'S at one month follow up.

This table highlights mean values of renal function tests after 1 month follow up. Mean urea levels were (32.84±16) mg/dl, mean creatinine levels were (0.92±0.32) mg/dl, & mean sodium was (137.65±2.92)mmol/l, with mean potassium of (4.21±0.30) mmol/l and mean chloride levels of (101.16±4.60) mmol/l.

RFT'S at 1 month	N	Minimum	Maximum	Mean	Std. Deviation
Urea (mg/dl)	89	9.00	88.00	32.84	16.00
Creatinine(mg/dl)	89	0.34	2.20	0.92	0.32
S. Sodium(mmol/l)	89	127.00	146.00	137.65	2.92
Potassium(mmol/l)	89	3.50	5.20	4.21	0.30
Chloride(mmol/l)	89	96.00	118.00	101.16	4.60

DISCUSSION

Dengue is a vector borne viral infection, transmitted to human beings via mosquito bite. Infection may be asymptomatic, subclinical or may present as illness ranging from mild disease to a life threatening disease. Complicated dengue may involve multiple systems such as hepatic, circulatory, nervous system, coagulation and renal system. Dengue viral infection (DVI) has a high prevalence in most tropical countries. DVI can be divided into DF (Dengue Fever), DHF (Dengue Hemorrhagic Fever) and DSS (Dengue Shock Syndrome). DHF and DSS have high mortality rate. Renal failure is a well-known complication of dengue fever which is associated with high mortality rate. Renal complications may occur in the form of electrolyte imbalance, hematuria, proteinuria, acute kidney injury (AKI) and glomerulonephritis. Dengue complicated with renal failure may present as oliguria, hematuria, or shock along with typical presentations of dengue.

Several mechanisms can lead to pathogenesis of AKI in dengue fever, which may include direct invasion by the virus, hemolysis, rhabdomyolysis and acute glomerular injury. Dengue virus antigen[50] may lead to cytopathic invasion which causes damage by inflammatory mediators that are released in response to the cytopathic effects. Intense inflammatory response [51] involves the release of inflammatory cytokines, activation of complement systems, endothelial injury which increases vascular permeability and causes intravascular volume depletion resulting in shock and reduction of renal perfusion with a consequence of acute tubular injury. Despite myriad improvements in the care of dengue patients, acute kidney injury remained least appreciated intricacy of dengue infection.

So, our study was conducted over a period of 1 year to observe the spectrum of renal involvement in dengue fever patients and their outcome after 1 month follow up.

Mean age of the patients in our study was 47.63±17.15 years.Most of the patients who presented with renal involvement among dengue fever were in the age group of 41-60 years (46%), followed by patients having age less than 34 years (34%). Few patients (20%) had age more than 60 years. In a study conducted by Khalil MAM et al [45], mean age of patients having AKI in dengue patients was 43 ± 18.39 years.

In our study, out of 100 patients, 68 were males and 32 were females. It was found that males were affected more than females. One possible cause for males being more commonly affected can be due to their exposure to mosquitoes because of outdoor activities. So, they spend more time outside their houses. Similar results of male preponderance were found in many studies. Studies conducted by Khalil MAM et al[45] and Vakrani GP et al[37] in which most of the patients were in age group of 30-60 years, had male predominance (70.9% & 73% respectively) which was concordant to our study.

Wasay M et al [52] conducted a study and found that out of 225 cases of confirmed dengue virus infection, there were 150 males (66.66%) and 75 females (33.33%). Similar results were seen by Shazia T Hakim, Syed M et al [53] who found that, out of 459 suspected cases of dengue fever, males were 376 (82%).

A previous study has also demonstrated that endoplasmic reticulum stress plays a role in the development of AKI in dengue fever in both humans and animal models and that the kidneys of males are more susceptible to such endoplasmic reticulum stress.[54]. Furthermore, testosterone has fibrotic and apoptotic properties that can increase the production of TNF-α, in turn triggering the inflammatory process leading to AKI commonly in males.

In our study, fever was present in all the patients, followed by decreased urine output (27%), rash on body (24%) and hemorrhagic manifestations (10%). Ghosh G et al (2013)[55] observed that the typical clinical features of dengue like fever was present in 80%, vomiting in 60% and rash in 25% of study population.

In a study done by Bui Vu Huy et al (2019)[56] the common manifestations were fever (96.9%), skin erythema (69.7%), myalgia (48.7%), and hemorrhagic manifestation (48.4%).

In our study, it was found that urea levels were elevated in 92 (92%) patients with renal failure among dengue patients. In a study conducted by Vakrani GP et al[37], urea levels were elevated in all (16) patients presenting with renal failure.

In our study, hyponatremia was seen in 60 patients (60%) out of total 100 patients. The mean value of sodium in our population study was 136.6±3.32mmol/l. In a study conducted by Lumpaopong et al in Thailand in 2010[57] mean sodium levels were 133.5 ± 3.52 mmol/L. In our study, hyponatremia was present in 33 patients (60%) of dengue fever patients (55 patients), 27 out of 45 patients (60%) of dengue hemorrhagic fever patients had hyponatremia and out of 11 patients of DSS, 5 patients (45%) showed hyponatremia. Low sodium levels were found in 54.5 % patients of DF and DHF in a study done by Sarfraz M et al[58] at DHQ Hospital and Rawalpindi Medical College, which was similar to our findings of hyponatremia.

Hyponatremia is the commonest detectable electrolyte abnormality found in dengue. Possible mechanisms for hyponatremia may be excess water from increased metabolism, transient inappropriate anti-diuretic hormone (SIADH) secretion leading to increased tubular re-absorption, the influx of sodium into cells due to a dysfunction of the sodium-potassium pump or a combination of these factors.[59] SIADH can also be a complication of fever, stress or dehydration that accompanies several infections. Factors such as low salt intake, vomiting or diarrhea may also contribute to hyponatremia.

Hypokalemia was seen in 24% of the patients in our study which was in accordance to study done by Lumpaopong et al[60] who reported hypokalemia among 14-28 % of patients with serologically proven dengue infections. None of the patients had an obvious cause for hypokalemia such as poor intake, drugs, I/V fluids or gastrointestinal loss. Hypokalemia may occur due to transient abnormalities in renal tubules resulting in increased potassium loss or to the redistribution of

potassium within cells. Intravenous fluids such as lactate-containing solutions could precipitate metabolic alkalosis which can shift potassium into the intra-cellular compartment. Stress induced catecholamine response with secondary insulin release or a neutropenia induced cytokine release have been proposed to internalize more potassium.[61] Monitoring plasma sugar levels in such patients may provide evidence for this mechanism. Hypokalemia could also result from increased renal excretion of potassium due to activation of the renin angiotensin and aldosterone system (RAAS) secondary to volume depletion, employing multiple factors may be responsible for hypokalemia in dengue fever patients.

Dengue viral infection is commonly associated with urinary abnormalities in form of proteinuria and hematuria. In our study, proteinuria was found in 73 patients (73%), with 1+ proteinuria in 42 patients, 2+ proteinuria in 23 patients, and 3+ proteinuria was present in 8 patients. Our findings were similar to study conducted by Vakrani GP et al [37], in which out of 16 patients of renal failure, 12 patients (75%) had proteinuria. In another study conducted by Eswarappa M et al[49] , 1+ proteinuria found in 84.4%, 2+ proteinuria in 8.71%, 3+ in 4.78% and nephrotic range proteinuria in 2.29% of patients. Proteinuria may occur as a result of direct cytopathic effect of viral antigen on renal tissues or inflammatory response resulting in release of inflammatory cytokines.

Hematuria was present in 38% of patients in present study. Our results were in concordance to study done by Vakrani GP et al[37] in which hematuria was present in 31 % among renal failure patients with dengue fever.

In our study, 3 patients underwent renal biopsy. Renal biopsy was performed in those patients who had persistently raised creatinine levels and proteinuria despite conservative treatment and dialysis. Renal biopsy was suggestive of proliferative glomerulonephritis in all three patients. Our findings were similar to study conducted by Eswarappa M et al[49], who did renal biopsy in patients having persistent hematuria and nephrotic range proteinuria. Reanl biopsy

findings were suggestive of proliferative and exudative Glomerulonephritis in all three patients. Repizo et al [62] reported a patient with dengue whose renal biopsy showed acute tubular necrosis and myoglobin deposits were found in the renal tubules by immunohistochemistry. Abboud et al[63] described a dengue patient with mesangioproliferative glomerulonephritis, immunoglobulin deposition, mild proteinuria and an abnormal urinary sediment. Bhagat et al [64] reported a DHF patient with acute glomerulonephritis and low complement levels (in the absence of shock, sepsis, hemolysis or rhabdomyolysis), thus pointing towards possible immune complex mediated injury.

In our study, 96 % patients were treated with intravenous fluids as mainstay of management of dengue fever is to give fluids to maintain adequate circulation. Inotropic support was given in 13 % of the patients who presented with shock or had shock even after giving adequate fluids during hospital stay. In a study conducted by Rubina et al[65], 12 patients (27.9%) presented in state of shock and required volume expanders±inotropic support.

Dialysis was required in 14% of the study population, who did not respond to conservative management. Hemodialysis was done in 5 patients (35.7%), Continuous Renal Replacement Therapy (CRRT) was done in 3 patients (21.4%), Peritoneal Dialysis was required in 3 patients (21.4%), Sustained Low- Efficiency Dialysis (SLED) followed by CRRT were done in 2 patients (14.3%) and SLED was done in 1 patient (7.1%).

Steroids were instituted in those patients who did not respond to conventional treatment, dialysis and who underwent renal biopsy. Biopsy was s/o Glomerulonephritis in these patients. On follow up, all patients showed improvement in creatinine levels after steroid therapy. Steroids were gradually tapered. Eswarappa M et al[49] gave short course of steroids in two patients who had persistent nephrotic-range proteinuria after four weeks and one patient was managed conservatively as he had a spontaneous decline in proteinuria by 50% at four week and both patients treated with steroids had decline in

proteinuria, and steroids were tapered and stopped within six weeks of initiation of therapy.

In our study it was found that DHF was seen in 45 patients, 37 patients (82.2%) survived and 8 patients (17.8%) expired (p=0.061). DSS was seen in 11 patients, 3 patients (27.3%) survived and 8 patients (72.7%) expired. (P value =0.001)A similar study was conducted by Laoprasopwattana et al [48] in which dengue hemorrhagic fever and acute kidney injury was associated with a high mortality rate of 64.0%.

On 1 month follow up, out of 100 patients, 89 patients including those patients who were started on steroids had improved renal functions and 11 patients expired. If evaluated and treated early, most of the patients of dengue fever with renal manifestations have favorable outcome.

Summary and Conclusion

- In our study, total 100 patients with Dengue Viral Infection with renal manifestations were taken.
- In our study, mean age of patients was 47.63±17.15 years and most of the patients diagnosed with dengue fever who had renal involvement were in age group 41-60 years (46.0%).
- Out of 100 patients enrolled in the study, males were 68 and females were 32. Therefore males were affected more than females
- In our study, fever was the most common presenting complaint, followed by decreased urine output which was presenting complaint among 27% patients. 24% patients had rashes on body. Patients also came with black colored stools (4%), red colored urine (4%) and bleeding (2%) as presenting complaint.
- At discharge, Urea levels were elevated in 33 alive patients (37.1%) and all 11 patients (100%) which expired had raised urea levels (p value =0.000)
- Out of total, 60 patients presented with hyponatremia at admission in our study, making it the most common electrolyte abnormality.
- At admission, Proteinuria was seen in 73 patients, with 1 + proteinuria in 42 patients (40 patients survived, 2 patients expired), 2+ proteinuria seen in 23 patients, out of which 20 patients survived and 3 patients (27.3%) expired. 3+ proteinuria was present in total of 8 patients, 2 patients (2.2%) survived and 6 patients (54.5%) expired with statistically significant p value of 0.001.
- In our study it was found that DHF was seen in 45 patients, 37 patients (82.2%) survived and 8 patients (17.8%) expired (p=0.061). DSS was seen in 11 patients, 3 patients (27.3%) survived and 8 patients (72.7%) expired. (P value =0.001)

- Mainstay of treatment was intravenous fluids. Dialysis was required in 14% of the study population, who did not respond to conservative management. Hemodialysis was done in 5 patients (35.7%), CRRT was done in 3 patients (21.4%), SLED and CRRT were done in 2 patients (14.3%), peritoneal dialysis was required in 3 patients (21.4%), and SLED was done in 1 patient (7.1%).
- Patients who did not respond to conventional treatment underwent renal biopsy. Renal biopsy in all these patients was s/o Glomerulonephritis and short course of steroids were given.
- After 1 month follow up, out of 100 patients, 89 patients including those patients who were started on steroids had improved renal functions and 11 patients expired.

CONCLUSION

Renal manifestations of dengue fever are usually mild, but some patients may develop severe renal injury. Renal failure in complicated Dengue Viral Infection (DHF/DSS) causes significant morbidity and mortality. The presence of AKI in patients with DVI should alert treating physicians for admission and early initiation of supportive treatment. Most of renal manifestations of Dengue fever are reversible, if detected early and prompt institution of appropriate therapy.

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Date 9/9/19

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Subject: **Approval of Plan of Thesis.**

This is to inform you that the Faculty of Medical Sciences in its meeting held on 29.05.2019 has approved the plan of thesis of **Rajneesh Bains**, a student of your college for **MD General Medicine** along with the names of Supervisor/Co-Supervisor as under:-

Topic Plan of Thesis

Spectrum of renal involvement in dengue fever patients admitted in tertiary care centre in North India

Supervisor
Dr. Amit Bery
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Co-Supervisor
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The student has to submit the four copies of thesis (along with PDF format) , to the Controller of Examinations, BFUHS, Faridkot, at least six months before the commencement of theory examination, if he/she is otherwise eligible to take the examination. He /She must directed to attach a photocopy of this letter with the forwarding letter while submitting thesis to the University along with the letter of approval of University for change of supervisor/Co-Supervisor, change of topic,(if any).

SP Singh

Dr. S P Singh MS(Oph)
Controller of Examinations

Note :

1. *If any discrepancy found regarding topic of thesis or Supervisor/Co-Supervisor, inform undersigned within one month after issue of this letter.*
2. *The student may submit the thesis as per the schedule already conveyed i.e for May/June examination 30th Nov of the preceding the year of examination and for Nov/Dec examinations 31st May of the year of examination.*

Sr. No.	Name	Age	Sex	CR No.	DOA	DOD	PRESENTING COMPLAINTS												PAST HISTORY		PERSONAL HISTORY		GENERAL PHYSICAL EXAMINATI		
							Fever		Black Coloured Stools		Decreased Urinary Output		Bleeding from any site		Rash on body		Red Coloured Urine		DM TYPE 2	HTN	Smoking	Alcohol Intake	Pallor	Icterus	Cyanosis
							Y/N	Duration(days)	Y/N	Duration	Y/N	Duration	Y/N	Duration	Y/N	Duration	Y/N	Duration	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N
1	RK	40	F	796407	25/8/19	30/8/19	Y	3	N		N		N		N		N		N	Y	N	N	N	N	N
2	KS	48	M	798638	30/8/19	9-9-19	Y	2	N		N		N		N		N		N	N	N	Y	N	N	N
3	SK	50	M	800434	9-1-19	14/1/19	Y	1	N		N		N		N		N		N	N	N	N	N	N	N
4	S	60	M	801155	9-2-19	14/2/19	Y	4	N		N		N		Y	1	N		N	N	N	N	N	N	N
5	SK	55	F	803736	9-5-19	9-16-19	Y	3	N		Y	1	N		N		Y	1	N	N	N	N	N	N	N
6	JK	76	M	803698	5-9-19	20/9/19	Y	5	N		Y	2	N		Y	2	N		Y	Y	N	N	N	N	N
7	GT	59	M	793192	22/8/19	9-9-19	Y	1	N		N		N		Y	1	N		N	Y	N	N	N	N	N
8	RD	58	M	800512	1-9-19	12-9-19	Y	3	Y	1	N		N		N		N		Y	N	N	N	N	N	N
9	AM	54	M	801466	9-3-19	9-19-19	Y	2	N		Y	2	N		N		N		N	N	N	N	N	N	N
10	A	64	M	803591	5-9-19	19/9/19	Y	2	N		Y	2	N		N		N		N	N	N	N	N	N	N
11	KK	27	F	808062	11-9-19	22/9/19	Y	4	N		Y	1	N		Y	2	N		N	N	N	N	N	N	N
12	BN	33	F	808221	9-12-19	9-21-19	Y	5	N		N		N		Y	1	N		N	N	N	N	N	N	N
13	SS	54	M	808163	9-11-19	23/11/19	Y	2	N		N		N		N		N		N	N	N	N	N	N	N
14	KS	39	M	807359	7-9-19	14/9/19	Y	6	N		N		N		N		N		N	N	N	N	N	N	N
15	JS	58	M	809650	13/9/19	19/9/19	Y	3	N		N		N		N		N		N	N	N	N	N	N	N
16	PK	33	F	809690	13/9/19	18/9/19	Y	1	N		N		N		N		N		N	N	N	N	N	N	N
17	AM	29	M	809734	14/9/19	19/9/19	Y	4	N		N		N		N		N		N	N	N	N	N	N	N
18	BS	84	M	810631	15/9/19	22/9/19	Y	6	N		N		N		N		N		Y	Y	N	N	N	N	N
19	KS	33	M	398472	25/9/19	4-10-19	Y	3	Y	1	N		N		N		N		N	N	N	N	N	N	N
20	AK	24	F	810621	15/9/19	19/9/19	Y	3	N		N		N		N		N		Y	N	N	N	N	N	N
21	VD	54	M	844439	6-11-19	11-11-19	Y	7	N		Y	3	N		N		N		Y	N	N	Y	Y	Y	N

Sr. No.	Name	ON			VITALS					SYSTEMIC EXAMINATION						INVESTIGATIONS				
		Clubbing	JVP	Oedema	SBP	DBP	PULSE	RR	Temperature	Respiratory System	CVS		CNS	Abdomen		Hemoglobin (gm/dl)		TLC (X 103/mm3)		N/L/M/E/B ()
		Y/N	raised/not raised	Y/N						Pulmonary Rales	S1	S2		Splenomegaly	Free Fluid	At Admission	At Discharge	At Admission	At Discharge	At Admission
1	RK	N	Not raised	N	110	60	98	12	99.4	A	P	P	Normal	A	A	10.9	10.1	16	19	90/5.8/4.1/0
2	KS	N	Not raised	N	100	60	104	16	100	A	P	P	Normal	A	P	10.4	9.8	5.2	12.3	72/14/10/2
3	SK	N	Not raised	N	110	70	88	20	100	A	P	P	Normal	A	A	12.6	11	6.9	5.8	68/19/11/0.9
4	S	N	Not raised	N	110	70	84	18	101	A	P	P	Normal	A	A	7.4	6.2	1.3	2.7	58/33/8/0
5	SK	N	Not raised	Y	130	70	78	20	100	P	P	P	Normal	A	A	9.6	9.2	8.9	15.6	88/8.9/2/0.3
6	JK	N	Not raised	N	100	60	120	20	100.4	P	P	P	Normal	A	A	13.6	13	6.9	7.2	78/13/7/0
7	GT	N	Not raised	N	100	70	88	18	100	A	P	P	Normal	A	A	9.5	8	12.5	5.2	90/2.5/7/0.1
8	RD	N	Not raised	N	140	90	98	20	100	A	P	P	Normal	A	A	11	10.9	15.4	11.4	71/3.1/10/10
9	AM	N	Not raised	N	120	70	88	20	99.4	A	P	P	Normal	A	A	17.7	16.4	17	14	89/5.8/4.6/0
10	A	N	Not raised	N	100	70	88	20	98.4	P	P	P	Normal	A	A	9.8	9.2	8	12.8	75/20/3/2
11	KK	N	Not raised	N	130	70	88	24	101	A	P	P	Normal	A	A	11.9	11.7	7.3	8	58/29/10/.8
12	BN	N	Not raised	N	100	70	84	18	98.4	A	P	P	Normal	A	A	8.4	10.4	14	24	86/6.5/6.6/0
13	SS	N	Not raised	N	130	70	88	20	101	A	P	P	Normal	A	A	13.4	11.4	4.5	6.1	74/20/2/.2
14	KS	N	Not raised	N	100	70	89	14	100	A	P	P	Normal	A	A	14.4	14	21	9.3	72/10/14/.1
15	JS	N	Not raised	N	100	60	94	20	101	A	P	P	Normal	A	A	15	14.6	4.8	3.3	45/43/10/.6
16	PK	N	Not raised	N	118	60	104	18	101	A	P	P	Normal	A	A	11.7	10.2	5	8.9	69/20/10/0.3
17	AM	N	Not raised	N	120	70	74	18	99.4	A	P	P	Normal	A	A	11	10.8	6	7.4	74/20/9.6/0
18	BS	N	Not raised	N	150	90	104	18	102	A	P	P	Normal	A	A	11.2	11	10	7.3	87/6.2/6/0
19	KS	N	Not raised	N	110	80	79	20	103	A	P	P	Normal	A	A	14	13.2	10.8	9.7	59/27/11/1
20	AK	N	Not raised	N	120	80	76	14	98.6	A	P	P	Normal	A	A	17	16	27	18	71/18/10/0
21	VD	N	Not raised	N	90	60	124	18	101	A	P	P	Normal	A	P	5.8	4.9	5.8	4.9	71/18/9/1

Sr. No.	Name		Platelets		PCV		PTI		INR		RFT Urea (mg/dl)		RFT Creatinine(mg/dl)		RFT S. Sodium(mmol/l)	
		At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge
1	RK	88/5.8/5.9/0	30	83	40	32	33.8	14.3	1.27	1.3	89	75	2.9	1.1	132	138
2	KS	81/5/10/3	64	100	45.3	40	60	20	4.99	1.94	148	68	1.86	1.24	125	127
3	SK	60/26/10/0.4	231	277	48.4	45	13.1		1.2		84	22	2	1.04	133	140
4	S	63/31/5/0	18	44	53	41	12		1.15		36	44	2.8	1.6	131	134
5	SK	77/18/1.9/1.1	14	59	44.4	43.1	13.6	15.4	1.2	1.4	202	136	6.7	5	141	146
6	JK	81/9.8/7/0.8	107	72	55	47.3	14		1.3		55	62	5.2	2.09	132	136
7	GT	84/6.6/8/0.4	30	60	43	35.9	16.6		1.52		114	142	4.58	2.4	124	125
8	RD	65/2.9/23/10	21	39	55	33.8	13	12	1.28	1.11	151	129	2.24	2	150	145
9	AM	83/7.7/7.4/0	63	44	43.4	44.1	16	15.4	1.47	1.41	63	44	2.5	1.06	132	135
10	A	64/23/13/1	23	152	47	39	13.8	13.5	1.14	1.24	185	102	5.6	2.04	130	149
11	KK	80/11/7/.8	42	210	44	37	9.1	9.7	0.8	0.89	66	31	1.9	0.66	125	138
12	BN	95/1.9/2.5/0.1	60	188	41.8	39.4	13.9		1.2		57	31	2.3	1.14	141	134
13	SS	52/38/7.3/.9	11	80	44.2	33	17.1		1.57		98	34	2.47	0.89	132	144
14	KS	63/25/10/.5	30	110	51	33.5	12.5		1.5		162	36	3.3	1.1	138	140
15	JS	43/45/8.3/1.6	75	160	47	41.1	14.2		1.3		84	48	2.4	0.78	129	138
16	PK	70/20/10/.2	24	73	53	38.6	13.4		1.23		88	21	2.3	0.8	140	138
17	AM	70/18/9/0	44	88	45.4	33	15.1		1.39		84	21	1.98	1.14	130	134
18	BS	82/11/6.6/0.3	60	143	57	36.1	13.8		1.2		198	74	2.59	1.43	150	148
19	KS	54/33/9.1/0	132	185	48	45.3	13		1.21		106	25	2.58	0.5	143	131
20	AK	70/24/8/0	22	88	50	44.1	11		1.1		93	44	2.4	0.6	128	136
21	VD	76/21/1/1	17	56	55.6	43.9	18.7	28.2	1.72	2.59	96	260	2.02	6.5	142	148

Sr. No.	Name	RFT Potassium(mmol/l)		RFT Chloride (mmol/l)		Urine Routine (proteins)		Urine Routine(RBC'S)		Dengue IgM	Dengue NS1 Ag	USG abdomen (if available)	Capillary leakage	Biopsy	COMPLICATIONS		TREATMENT
		At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Admission	At Admission	Y/N	Y/N	DHF	DSS	IV FLUIDS
1	RK	3.1	3.59	104	110	1+				12.8		mild ascites,B/L pleural effusion	Y	N	Y	N	Y
2	KS	3.3	4.5	96	93			Y		12.18		CLD with PHTN,modert e ascites	Y	N	Y	N	Y
3	SK	4.4	4.2	100	106					13		GB wall edema	N	N	N	N	Y
4	S	3.8	4	98	96	2+					39	mild ascies, B/L pleural effusion	Y	N	Y	N	Y
5	SK	3.6	3.9	107	105	1+		Y		14		normal study	N	N	N	N	N
6	JK	5.7	5.14	103	99	3+	2+	Y		12		mild ascites,B/L pleural effusion	Y	N	Y	Y	Y
7	GT	4	4.45	103	97	1+		Y		13		mild ascites	Y	N	Y	N	Y
8	RD	4.2	4.07	115	109	1+		Y		18		mild ascites,B/L pleural effusion	Y	N	Y	N	Y
9	AM	5.9	4.9	101	99	1+				23		GB wall edema	N	N	N	N	Y
10	A	2.9	3.5	88	115	2+		Y		24		mild ascites	Y	N	Y	N	Y
11	KK	3.1	4.19	96	108	1+		Y		15		normal study	N	N	N	N	Y
12	BN	4.2	5.1	110	102	1+				18		B/L pleural effusion,mild ascites	Y	N	Y	N	Y
13	SS	5.2	4.25	118	112	1+					38	mild ascites	Y	N	Y	N	Y
14	KS	3.2	4.4	98	103	1+				14		B/L pleural effusion	Y	N	Y	N	Y
15	JS	4.4	4.04	103	102	3+	1+	Y			69	mild ascites,B/L pleural effusion	Y	N	Y	N	Y
16	PK	5.59	4.18	101	106			y			71	B/L pleural	Y	N	Y	N	Y
17	AM	3.8	4.26	101	105	1+	2+	Y			69	B/L pleaural effusion	Y	N	Y	N	Y
18	BS	4.07	3.35	123	116	1+		Y		20		mild ascites,B/L pleural effusion	Y	N	Y	N	Y
19	KS	4.83	4.7	11	99	1+					54	normal study	N	N	N	N	Y
20	AK	4.8	3.4	104	111	2+		Y		16		B/L pleural effusion	Y	N	Y	N	Y
21	VD	3.19	6.6	102	97	3+	3+	Y		14		CLD with PHTN,modert e ascites,acuter enal disease	Y	N	Y	Y	Y

Sr. No.	Name					OUTCOME		RFT ON F/U (AT 1 MONTH)					AKIN 1
		ANTIBIOTICS	INOTROPES	HEMODIALYSIS(IF INDICATED)	PLATELETTRANSFUSION	Duration of Stay in Hospital	Improved/DAMA/Expired	Urea (mg/dl)	Creatinine(mg/dl)	S. Sodium(mmol/l)	Potassium (mmol/l)	Chloride(mmol/l)	Final Outcome
1	RK	Y	N	N	N	6	improved	48	0.9	138	4.2	106	Alive
2	KS	Y	N	N	N	12	improved	45	1	139	4.4	96	Alive
3	SK	Y	N	N	N	5	improved	17	0.9	136	4	98	Alive
4	S	Y	N	N	N	4	improved	36	0.99	137	3.5	98	Alive
5	SK	Y	N	3 HD SESSIONS	Y	12	DAMA						expired
6	JK	Y	Y	2 SLED,CRRT	N	15	expired						expired
7	GT	Y	N	N	N	19	improved	47	1.1	128	4.4	98	Alive
8	RD	Y	N	N	N	12	improved	54	0.5	140	4.4	98	Alive
9	AM	Y	N	N	N	17	improved	40	1.04	136	4.2	106	Alive
10	A	Y	N	N	N	15	improved	50	0.6	136	4.2	106	Alive
11	KK	Y	N	N	N	11	improved	20	0.36	136	4.2	108	Alive
12	BN	Y	N	N	N	10	improved	40	1.08	127	4.8	98	Alive
13	SS	Y	N	N	Y	13	improved	34	0.84	140	4.2	108	Alive
14	KS	Y	N	N	N	7	improved	40	0.8	138	4.2	98	Alive
15	JS	Y	N	N	N	7	improved	18	0.66	136	4.2	102	Alive
16	PK	Y	N	N	N	5	improved	20	0.6	138	4.1	106	Alive
17	AM	Y	N	N	N	5	improved	40	0.6	140	4.1	103	Alive
18	BS	Y	N	N	N	8	improved	44	0.9	138	4.2	104	Alive
19	KS	Y	N	N	N	9	improved	24	0.66	138	4.4	106	Alive
20	AK	Y	N	N	N	4	improved	40	0.7	139	3.8	110	Alive
21	VD	Y	Y	CRRT	Y	6	expired						expired

Sr. No.	Name	Age	Sex	CR No.	DOA	DOD	PRESENTING COMPLAINTS												PAST HISTORY		PERSONAL HISTORY		GENERAL PHYSICAL EXAMINATI		
							Fever		Black Coloured Stools		Decreased Urinary Output		Bleeding from any site		Rash on body		Red Coloured Urine		DM TYPE 2	HTN	Smoking	Alcohol Intake	Pallor	Icterus	Cyanosis
							Y/N	Duration(days)	Y/N	Duration	Y/N	Duration	Y/N	Duration	Y/N	Duration	Y/N	Duration	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N
22	KK	40	F	850888	16/11/19	5-12-19	Y	3	N		N		N		N		N		N	N	N	N	N	N	N
23	PS	22	M	851032	17/11/19	22/11/19	Y	1	N		N		N		Y	1	N		N	N	N	N	N	N	N
24	RK	55	F	847577	12-11-19	18/11/19	Y	4	N		N		N		N		N		N	N	N	N	N	N	N
25	KG	42	M	850789	16/11/19	20/11/19	Y	2	N		N		N		N		N		N	N	N	N	N	N	N
26	GK	58	F	848643	13/11/19	23/11/19	Y	2	Y	1	N		Y	1	N		N		N	N	N	N	N	N	N
27	PK	58	M	848101	13/11/19	16/11/19	Y	3	N		N		N		N		N		N	N	N	N	N	N	N
28	D	26	M	847934	12-11-19	18/11/19	Y	3	N		Y	1	N		N		N		N	N	N	N	N	N	N
29	PK	57	F	840915	1-11-19	6-11-19	Y	8	N		N		N		N		N		Y	N	N	N	N	N	N
30	AS	23	M	841029	1-11-19	14/11/19	Y	5	N		N		N		N		Y	1	N	N	N	N	N	N	N
31	R	25	F	841090	1-11-19	4-11-19	Y	7	N		N		N		Y	3	N		N	N	N	N	N	N	N
32	SS	40	M	836229	25/10/19	28/10/19	Y	1	N		Y	2	N		N		N		N	N	N	N	N	N	N
33	GC	58	M	831223	16/10/19	22/10/19	Y	4	N		N		N		Y	1	N		N	N	N	N	N	N	N
34	AK	75	F	828967	13/10/19	20/10/19	Y	3	N		N		N		Y	1	N		N	Y	N	N	N	N	N
35	AC	27	M	832216	18/10/19	21/10/19	Y	3	N		N		N		N		N		N	N	N	N	N	N	N
36	KS	54	M	497689	17/9/19	21/9/19	Y	5	N		N		N		N		N		N	Y	N	N	N	N	N
37	AP	21	F	812529	21/9/19	26/9/19	Y	6	N		N		N		N		N		N	N	N	N	N	N	N
38	SS	35	M	813138	3-9-19	12-9-19	Y	3	N		Y	1	N		N		N		N	N	N	N	N	N	N
39	VKB	68	M	813167	19/9/19	28/9/19	Y	1	N		N		N		N		N		N	Y	N	N	N	N	N
40	RS	55	M	813174	19/9/19	6-10-19	Y	5	N		Y	4	N		N		N		N	N	N	Y	N	N	N
41	SD	85	F	813762	19/9/19	25/9/19	Y	5	N		N		N		Y	1	N		N	Y	N	N	N	N	N
42	SS	28	M	815521	22/9/19	27/9/19	Y	5	N		N		N		N		N		N	N	N	N	N	N	N
43	PK	72	M	815477	22/9/19	27/9/19	Y	3	N		N		N		N		N		Y	N	N	N	N	N	N
44	M	46	F	817324	24/9/19	4-10-19	Y	4	N		N		N		Y	3	N		N	N	N	N	N	N	N

Sr. No.	Name	ON			VITALS					SYSTEMIC EXAMINATION						INVESTIGATIONS				
		Clubbing	JVP	Oedema	SBP	DBP	PULSE	RR	Temperature	Respiratory System	CVS		CNS	Abdomen		Hemoglobin (gm/dl)		TLC (X 103/mm3)		N/L/M/E/B ()
		Y/N	raised/not raised	Y/N						Pulmonary Rales	S1	S2		Splenomegaly	Free Fluid	At Admission	At Discharge	At Admission	At Discharge	At Admission
22	KK	N	Not raised	N	130	70	84	18	99.6	A	P	P	Normal	A	A	10.7	11.2	12.3	7.8	66/21/9/.3
23	PS	N	Not raised	N	110	80	76	16	101	A	P	P	Normal	A	A	13.4	13.1	4.8	3.7	76/14/8/.1
24	RK	N	Not raised	N	130	70	78	14	98.4	A	P	P	Normal	A	A	11.6	9.9	7.6	6.9	66/23/8/1.5
25	KG	N	Not raised	N	110	70	98	16	100	A	P	P	Normal	A	A	13.8	12.2	5.9	12	73/10/15/.1
26	GK	N	Not raised	N	90	60	86	16	98.4	A	P	P	Normal	A	A	14.4	7.8	5.2	5.5	68/24/6/.6
27	PK	N	Not raised	N	130	70	90	18	98.6	A	P	P	Normal	A	A	10	9.8	4.5	3.1	64/23/10/.6
28	D	N	Not raised	N	110	70	88	16	99.8	A	P	P	Normal	A	A	14	12	9.7	6.9	83/11/5/0
29	PK	N	Not raised	N	130	70	84	18	101	A	P	P	Normal	A	A	11	10.8	22	13.8	83/9.5/6.5/0.2
30	AS	N	Not raised	N	100	70	88	14	98.4	A	P	P	Normal	A	A	8.4	8.8	17.7	19	94/3/1.8/.6
31	R	N	Not raised	N	110	70	96	20	100.4	A	P	P	Normal	A	A	8	8.4	7	13.2	74/16/8.6/.1
32	SS	N	Not raised	N	90	60	108	20	100	P	P	P	Normal	A	P	13	11	16.7	15.6	67/23/8/.2
33	GC	N	Not raised	N	100	70	118	18	103	A	P	P	Normal	A	A	11	12	10	11	84/5/9/0
34	AK	N	Not raised	N	100	60	78	18	98.6	A	P	P	Normal	A	A	8.3	8.2	36	8.8	83/8/7.5/0
35	AC	N	Not raised	N	130	80	83	20	101	A	P	P	Normal	A	A	12.4	11.9	12	7	77/12/10/.1
36	KS	N	Not raised	N	140	90	86	18	100	A	P	P	Normal	A	A	12.9	13	2.4	4.3	77/21/10/.7
37	AP	N	Not raised	N	130	70	90	18	98	A	P	P	Normal	A	A	12.2	11.4	6.4	6.1	41/47/10/.3
38	SS	N	Not raised	N	100	60	70	16	100	P	P	P	Normal	A	A	10	10.6	9	10	82/12/4/0
39	VKB	N	raised	N	130	70	96	18	100	P	P	P	Normal	A	A	13	12	6	6.5	59/24/9/.4
40	RS	N	Not raised	Y	110	70	78	18	102	A	P	P	Normal	A	A	7.8	6.6	14	17	78/10/10/.9
41	SD	N	Not raised	N	100	60	94	18	101	A	P	P	Normal	A	A	11.4	9.3	36	28	28/2.7/3.2/8
42	SS	N	Not raised	N	110	60	90	14	100	A	P	P	Normal	A	A	8.9	9.8	10	7.9	70/19/10/.2
43	PK	N	Not raised	N	100	70	104	20	100	A	P	P	Normal	A	A	9	10	12	9	87/7/9/0
44	M	N	Not raised	N	130	70	74	14	98.8	A	P	P	Normal	P	A	9.2	10	9	6.8	65/31/2/0

Sr. No.	Name		Platelets		PCV		PTI		INR		RFT Urea (mg/dl)		RFT Creatinine(mg/dl)		RFT S. Sodium(mmol/l)	
		At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge
22	KK	62/25/10/1	15	240	44.8	36.3	15	16	1.39	1.55	195	112	6.85	3.6	129	135
23	PS	67/20/11/.3	7	80	49	35.2	11.5		1.06		90	19	2.4	0.7	137	139
24	RK	72/18/8/.1	30	140	47.3	33	15.7		1.44		88	14	2.6	0.3	134	136
25	KG	77/11/11/.1	14	90	51	41	12.3		1.13		44	51	1.9	1.06	143	145
26	GK	88/7.7/4/.1	6	40	49.5	40.4	19.8	15.5	1.82	1.42	274	104	3.59	1.43	153	144
27	PK	54/28/11/4.6	50	116	36	34	10		0.9		73	25	1.8	1.06	134	139
28	D	59/26/10/2	22	110	40.1	34	15		1.38		233	79	5.88	1.89	134	142
29	PK	72/23/4.3/.1	56	110	45.2	33	14.3		1.31		123	108	1.67	1.19	141	150
30	AS	84/7.5/6.8/1.2	46	255	48.3	37	16.4		1.5		88	145	3.77	2	132	136
31	R	70/20/8/2/0	13	170	46.1	44	16.7	14	1.53	1.3	66	51	1.77	1.35	129	129
32	SS	60/27/6.8/0	38	60	43.2	40.1	17.4	22.9	1.6	2.1	111	177	3.57	6.3	148	142
33	GC	81/26/8/.4	18	216	49	44	13		1.2		46	50	2	1.03	140	148
34	AK	75/12/9/2	83	233	42.1	40.2	10.9		1		154	63	5.16	1.32	131	140
35	AC	74/14/10/.1	67	90	35.2	33.7	12	13	1.1	1.2	127	98	3.28	1.27	137	143
36	KS	58/28/10/1	104	173	50	44	13		1.4		66	33	2.1	1.3	120	125
37	AP	41/55/10/.5	27	84	41	40.2	12		1.2		86	40	1.9	1	141	136
38	SS	80/16/2.4/0	60	101	44.6	42.3	11.4		1.2		126	70	3	1.2	150	144
39	VKB	61/19/10/.8	18	51	37.1	30	11		1.12		48	30	2.5	1.12	133	137
40	RS	77/9/10/2.2	79	118	49.8	41	24	27	2.28	2.5	43	88	1.15	4.13	132	122
41	SD	18/3.1/8.6/9	152	110	44	40.2					67	37	2.1	1.18	127	131
42	SS	59/32/9/.3	60	226	39.1	35.7	13.9		1.28		86	68	3.22	1.4	136	135
43	PK	78/12/7/0	85	156	38.7	35.8	13		1.27		82	51	2	1.17	122	135
44	M	66/24/7/.5	70	120	39.9	33	12		1.1		88	35	2.6	0.5	139	144

Sr. No.	Name	RFT Potassium(mmol/l)		RFT Chloride (mmol/l)		Urine Routine (proteins)		Urine Routine(RBC'S)		Dengue IgM	Dengue NS1 Ag	USG abdomen (if available)	Capillary leakage	Biopsy	COMPLICATIONS		TREATMENT
		At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Admission	At Admission	Y/N	Y/N	DHF	DSS	IV FLUIDS
22	KK	6.71	3.91	92	91	2+		Y		18		GB wall edema,B/L pleural effusion	Y	N	Y	Y	Y
23	PS	3.21	3.7	95	105	1+		Y			115	mild ascites	Y	N	Y	N	Y
24	RK	3.13	3.4	103	100					13		mild ascites	Y	N	Y	N	Y
25	KG	3.43	3.7	104	113	2+				36		B/L pleural effusion	Y	N	Y	N	Y
26	GK	4.98	3.94	113	100	3+	2+	Y		15.6		GB wall edema, mild ascites,B/L pleural effusion	Y	N	Y	Y	Y
27	PK	2.91	4.7	112	103	1+				24		normal study	N	N	N	N	Y
28	D	5.18	4.6	97	108	2+		Y		36		B/L pleural effusion	Y	N	Y	N	Y
29	PK	3.28	4.4	107	117			Y		14		mild ascites	Y	N	Y	N	Y
30	AS	4.9	4.3	97	99	2+		Y			63	left pleural effusion,mild ascites	Y	N	Y	N	Y
31	R	4.14	4.49	93	88	1+				35		B/L pleural effusion,mild ascites	Y	N	N	N	Y
32	SS	4.88	6.29	106	103	2+		Y		21		CLD with PHTN with moderate ascites	Y	N	N	Y	Y
33	GC	4.8	4.4	101	110					20		normal study	N	N	N	N	Y
34	AK	5.17	4.39	95	107					14		normal study	N	N	N	N	Y
35	AC	4.41	3.59	99	108	1+				24		normal study	N	N	N	N	Y
36	KS	3.3	4	88	90					18		gall bladder sludge	N	N	N	N	Y
37	AP	3.62	4	107	106					13		GB wall edema, mild ascites,B/L pleural effusion	N	N	N	N	Y
38	SS	3.93	3.7	118	99						55	mild ascites	N	N	N	N	Y
39	VKB	3.8	3.9	101	106			Y		18		minimal ascites	Y	N	Y	N	N
40	RS	4.3	4.62	101	103	3+	3+	Y			30	mild ascites, minimal B/L pleural effusion	Y	N	Y	N	Y
41	SD	5.7	3.9	92	104						60	normal study	N	N	N	N	N
42	SS	7.35	3.5	102	108					82		GB wall edema	N	N	N	N	Y
43	PK	6.13	3.14	89	97			Y		53		GB wall edema,moderate ascites	N	N	N	N	N
44	M	5.6	3.8	96	101					17		mild ascites	Y	N	Y	N	Y

Sr. No.	Name					OUTCOME		RFT ON F/U (AT 1 MONTH)					AKIN 1
		ANTIBIOTICS	INOTROPES	HEMODIALYSIS(IF INDICATED)	PLATELETTRANSFUSION	Duration of Stay in Hospital	Improved/DAMA/Expired	Urea (mg/dl)	Creatinine(mg/dl)	S. Sodium(mmol/l)	Potassium (mmol/l)	Chloride(mmol/l)	Final Outcome
22	KK	Y	Y	2HD SESSIONS	Y	19	improved	9	0.78	139	4.03	100	Alive
23	PS	Y	N	N	Y	6	improved	16	0.7	136	3.6	105	Alive
24	RK	Y	N	N	N	7	improved	18	0.34	138	3.99	99	Alive
25	KG	Y	N	N	Y	4	improved	18	0.4	140	4.6	98	Alive
26	GK	Y	Y	N	Y	10	improved	60	0.7	138	4.3	98	Alive
27	PK	Y	N	N	N	4	improved	28	0.6	138	4	100	Alive
28	D	Y	N	N	N	7	improved	18	1.04	134	4.4	99	Alive
29	PK	Y	N	N	N	6	improved	48	1.1	139	3.9	99	Alive
30	AS	Y	Y	N	N	14	improved	44	0.46	136	4.7	98	Alive
31	R	Y	N	N	Y	4	improved	47	1.1	136	4.4	98	Alive
32	SS	Y	Y	CRRT	N	4	DAMA						expired
33	GC	Y	N	N	Y	6	improved	14	1.04	134	4.5	96	Alive
34	AK	Y	N	N	N	8	improved	44	1.09	138	4.3	106	Alive
35	AC	Y	N	N	N	4	improved	48	1.01	143	3.6	104	Alive
36	KS	Y	N	N	N	5	improved	28	1	130	4.2	99	Alive
37	AP	Y	N	N	N	5	improved	36	1.1	134	4.5	98	Alive
38	SS	Y	N	N	N	9	improved	46	1.1	146	4	98	Alive
39	VKB	Y	N	N	N	10	improved	26	1	138	3.8	104	Alive
40	RS	Y	N	N	N	17	DAMA						expired
41	SD	Y	N	N	N	6	improved	30	1	136	3.9	106	Alive
42	SS	Y	N	N	N	5	improved	33	0.9	135	3.8	106	Alive
43	PK	Y	N	N	N	5	improved	19	1.04	136	4.3	98	Alive
44	M	Y	N	N	N	10	improved	20	0.9	140	4.1	98	Alive

Sr. No.	Name	Age	Sex	CR No.	DOA	DOD	PRESENTING COMPLAINTS												PAST HISTORY		PERSONAL HISTORY		GENERAL PHYSICAL EXAMINATI		
							Fever		Black Coloured Stools		Decreased Urinary Output		Bleeding from any site		Rash on body		Red Coloured Urine		DM TYPE 2	HTN	Smoking	Alcohol Intake	Pallor	Icterus	Cyanosis
							Y/N	Duration(days)	Y/N	Duration	Y/N	Duration	Y/N	Duration	Y/N	Duration	Y/N	Duration	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N
45	AS	40	M	816404	23/9/19	26/9/19	Y	3	N		Y	1	N		Y	2	N		N	N	N	N	N	N	N
46	PD	40	F	817401	25/9/19	4-10-19	Y	2	N		N		N		N		N		N	N	N	N	N	N	N
47	DD	81	M	816548	23/9/19	26/9/19	Y	2	N		Y	1	N		N		N		Y	N	N	N	Y	N	N
48	GS	36	M	380521	25/9/19	30/9/19	Y	1	N		N		N		N		N		N	N	N	N	N	N	N
49	PK	43	M	539021	3-1-19	23/11/19	Y	5	N		Y	3	N		N		N		N	N	N	N	N	N	N
50	JK	71	F	652987	13/1/19	23/1/19	Y	5	N		N		N		Y	1	N		N	N	N	N	Y	N	N
51	GR	70	F	502304	28/1/19	4-2-19	Y	5	N		N		N		N		N		N	Y	N	N	N	N	N
52	HS	56	M	657603	22/1/19	23/1/19	Y	7	N		Y	5	N		N		N		N	Y	N	N	N	N	N
53	RJ	45	M	657950	22/1/19	29/1/19	Y	2	N		Y	1	N		N		N		N	N	N	N	N	N	N
54	AS	31	M	666055	26/1/19	31/1/19	Y	5	N		Y	4	N		Y	3	Y	2	N	N	N	N	N	N	N
55	SS	58	M	403659	10-2-19	20/2/19	Y	5	N		N		N		N		N		N	N	N	N	N	N	N
56	SS	54	M	403651	10-2-19	18/2/19	Y	6	N		N		N		Y	4	N		N	N	Y	N	N	N	N
57	GS	21	M	727945	13/5/19	20/5/19	Y	5	N		N		N		N		N		N	N	N	N	N	N	N
58	KS	46	M	726962	11-5-19	19/5/19	Y	10	N		Y	4	N		N		N		N	Y	N	N	N	N	N
59	DS	32	M	752076	21/6/19	26/6/19	Y	15	N		N		N		Y	4	N		N	N	N	N	N	N	N
60	R	61	F	620533	23/6/19	28/6/19	Y	10	N		N		Y	1	Y	5	N		N	N	N	N	Y	N	N
61	TS	29	M	770991	20/7/19	28/7/19	Y	7	N		N		N		N		N		N	N	N	N	N	N	N
62	V	55	F	777521	29/7/19	4-8-19	Y	5	N		N		N		N		N		Y	N	N	N	N	N	N
63	OP	81	M	778257	20/7/19	24/7/19	Y	5	N		Y	2	N		N		N		Y	N	N	N	N	N	N
64	RK	46	M	791094	19/8/19	1/9//19	Y	3	N		N		N		N		N		N	N	N	N	N	N	N
65	DK	19	M	790246	18/8/19	24/8/19	Y	2	N		Y	1	N		N		N		N	N	N	N	N	N	N
66	HPS	28	M	201766	21/8/19	25/8/19	Y	8	N		N		N		N		N		N	N	N	N	N	N	N
67	KD	60	F	791876	20/8/19	1-9-19	Y	2	N		N		N		N		N		N	Y	N	N	N	N	N

Sr. No.	Name	ON			VITALS					SYSTEMIC EXAMINATION						INVESTIGATIONS				
		Clubbing	JVP	Oedema	SBP	DBP	PULSE	RR	Temperature	Respiratory System	CVS		CNS	Abdomen		Hemoglobin (gm/dl)		TLC (X 103/mm3)		N/L/M/E/B ()
		Y/N	raised/not raised	Y/N						Pulmonary Rales	S1	S2		Splenomegaly	Free Fluid	At Admission	At Discharge	At Admission	At Discharge	At Admission
45	AS	N	Not raised	N	110	70	94	20	100	A	P	P	Normal	A	A	15	14	3.7	4	62/28/7/1.9
46	PD	N	Not raised	N	100	60	84	16	98	A	P	P	Normal	A	A	13	11	4.5	6	70/18/2/.2
47	DD	N	Not raised	N	140	70	106	18	100	A	P	P	Normal	A	A	7.2	7.3	6	4.3	56/29/7/5
48	GS	N	Not raised	N	90	60	106	18	100.4	A	P	P	Normal	A	A	11.9	11.7	7	8	58/29/10/.8
49	PK	N	Not raised	N	110	70	88	20	100	A	P	P	Normal	A	A	9.5	9.2	11	8	90/33/7/0
50	JK	N	Not raised	N	130	70	88	18	101	A	P	P	Normal	A	A	6.4	7.8	7.1	17	53/34/10/.1
51	GR	N	Not raised	N	100	60	100	20	101	A	P	P	Normal	A	A	9.8	8.8	18	10	83/7.9/10/0
52	HS	N	Not raised	N	110	70	118	20	100	A	P	P	Normal	A	A	14.5	14	16	9	79/15/6/0
53	RJ	N	Not raised	N	130	70	108	20	99.8	A	P	P	Normal	A	A	13.3	14	17	6.9	91/34/5/0
54	AS	N	Not raised	N	90	50	112	22	98.7	P	P	P	Normal	A	A	11.4	10	17	18	60/36/11/1
55	SS	N	Not raised	N	110	70	78	20	98	A	P	P	Normal	A	A	8.3	8.6	5.8	5	82/13/10/0
56	SS	N	Not raised	N	100	70	78	20	101	A	P	P	Normal	A	A	9.6	10	5.8	8	65/18/10/0
57	GS	N	Not raised	N	110	80	90	21	100	A	P	P	Normal	A	A	11	10.6	12	9.7	50/32/5/.1
58	KS	N	Not raised	N	100	50	110	20	101	P	P	P	Normal	A	P	7.7	7.9	24	10	81/9/6/.5
59	DS	N	Not raised	N	110	70	79	22	100	A	P	P	Normal	A	A	12	11	9	10	59/28/6/.4
60	R	N	Not raised	N	110	70	78	20	101	A	P	P	Normal	A	A	6.6	8.4	10	20	86/32/7/0
61	TS	N	Not raised	N	130	70	90	16	98.9	A	P	P	Normal	A	A	10.4	11	5.5	7.2	57/14/8/1
62	V	N	Not raised	N	110	60	70	14	99.6	A	P	P	Normal	A	A	13	12.2	27	8.1	85/8.4/7/.1
63	OP	N	Not raised	N	100	60	79	18	101	A	P	P	Normal	A	A	14	13.4	33	18	73/16/7/.4
64	RK	N	Not raised	N	110	70	78	20	101	A	P	P	Normal	A	A	13	11.5	4	4	80/12/8/.1
65	DK	N	Not raised	N	100	70	106	20	101	A	P	P	Normal	A	A	14	12	5	8	65/25/6/0
66	HPS	N	Not raised	N	130	60	88	20	98	A	P	P	Normal	A	A	9.8	9.7	6.6	8.6	48/11/7/1
67	KD	N	Not raised	N	110	70	76	20	101	A	P	P	Normal	A	A	12	10	16	8	81/13/5/1

Sr. No.	Name		Platelets		PCV		PTI		INR		RFT Urea (mg/dl)		RFT Creatinine(mg/dl)		RFT S. Sodium(mmol/l)	
		At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge
45	AS	57/29/10/.7	24	123	44.2	40.8	11.9		1.08		135	31	2.3	0.9	128	132
46	PD	58/34/7/.9	13	84	45.1	43.1	15		1.4		104	34	2.4	0.9	123	136
47	DD	56/31/7/2	70	97	38.9	30	15.9		1.44		103	100	4.5	3.12	133	136
48	GS	56/11/7/.8	66	140	35.6	34.1	9.1		0.8		88	31	2.4	0.6	128	138
49	PK	90/24/10/0	100	188	39.2	36.4	12	11	1.1	1.16	130	42	2.75	1.1	142	136
50	JK	54/42/4/0	24	155	35.7	30	12		1.1		118	59	1.6	1.2	124	135
51	GR	78/12/7/0.1	125	313	45.2	42.1	12		1.2		148	130	1.8	2.4	125	131
52	HS	70/12/8/0	118	275	44.3	41.9	12		1.2		191	40	4.3	1.2	134	136
53	RJ	88/35/4/0	120	165	44.6	35.2	13		1.3		158	241	3.4	8.6	131	148
54	AS	73/23/13/1.4	40	59	48.2	40.2	27	19	2.4	1.7	218	230	8.8	10.97	155	146
55	SS	65/18/8/.1	80	116	43.6	42.1	29	19	2.6	1.8	52	28	1.93	1.6	132	134
56	SS	60/16/8/0	88	118	36.3	35.2					55	20	2.8	1.4	133	135
57	GS	40/33/6/0	118	103	45.1	42.6	11		1.2		50	25	2.7	1.12	139	140
58	KS	64/17/5/.1	77	490	55	44.6	13		1.1		108	70	7.55	4.1	130	134
59	DS	62/27/4/.4	12	150	47.2	44.6	20	14	1.8	1.3	127	29	6.5	2.6	128	136
60	R	90/60/10/.7	18	107	52.4	43.1	13		1.4		150	90	8.44	4.4	127	131
61	TS	67/25/7/.6	53	114	44.8	33	10		1		88	25	2.4	1.05	131	140
62	V	59/35/6/.4	44	241	47.5	45.1	11		1.2		84	33	2.9	0.9	146	143
63	OP	70/18/5/.3	80	120	46	44.2	13		1.14		155	88	2.1	1.4	170	156
64	RK	82/16/10/.4	115	124	49.7	40.2	10.5	10	0.95	0.96	378	49	5.51	1.03	152	133
65	DK	73/15/7/0.1	9	57	44.3	41.2	12		1.09		84	22	2.04	1	130	134
66	HPS	41/18/5/1	118	208	36.2	34.1	12		1.18		74	19	2.4	1	142	147
67	KD	88/9/3/.6	227	340	33.4	32.1	13		1.4		74	49	2.3	1	158	142

Sr. No.	Name	RFT Potassium(mmol/l)		RFT Chloride (mmol/l)		Urine Routine (proteins)		Urine Routine(RBC'S)		Dengue IgM	Dengue NS1 Ag	USG abdomen (if available)	Capillary leakage	Biopsy	COMPLICATIONS		TREATMENT
		At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Admission	At Admission	Y/N	Y/N	DHF	DSS	IV FLUIDS
45	AS	3.01	4.7	99	100						32	fatty liver grade II,mild splenomegaly, minimal ascites,B/L pleural effusion	N	N	N	N	Y
46	PD	5.4	4.3	118	110	2+					38	minimal ascites,reactive GB wall edema	N	N	N	N	Y
47	DD	5.6	4.74	109	105	1+		Y			22	minimal ascites	Y	N	Y	N	Y
48	GS	4.6	4.1	96	106	2+				15		reactive GB wall edema	N	N	N	N	Y
49	PK	5.4	4.3	111	106	2+		Y			117	normal study	N	N	N	N	Y
50	JK	3.98	4.5	84	102	1+		Y			43	GB wall edema,minimal ascites	Y	N	Y	N	Y
51	GR	3.22	3.6	99	90	1+		Y		30		normal study	N	N	N	N	Y
52	HS	4.3	4.2	95	98					13		reactive GB wall edema	N	N	N	N	Y
53	RJ	6.2	7.6	103	93	3+	1+	Y		15		GB sludge	N	N	N	Y	Y
54	AS	4.1	4.5	102	100	2+		Y			21	hepatosplenomegaly,GB wall edema,mild ascites	Y	N	Y	Y	Y
55	SS	4.6	5.16	108	107					14		mild splenomegaly	N	N	N	N	Y
56	SS	4.2	4.5	111	108	1+					60	normal study	N	N	N	N	Y
57	GS	4.5	4	104	106	2+				28		normal study	N	N	N	N	Y
58	KS	5.59	4.2	87	96	2+	2+	Y		19		moderate ascites,B/L pleural effusion	Y	Y	Y	Y	Y
59	DS	6.5	5.1	92	93					26		G B sludge	N	N	N	N	Y
60	R	3	4.4	99	104	2+		y		14		minimal ascites	Y	Y	Y	N	Y
61	TS	2.88	4.4	104	105	1+				11.6		minimal ascites	Y	N	Y	N	Y
62	V	3.6	4.1	106	107	1+					59	normal study	N	N	N	N	Y
63	OP	3.4	4.4	136	120	1+				82		normal study	N	N	N	N	Y
64	RK	4.93	4.65	114	99	1+				11.86		fatty liver grade II,GB sludge	N	N	N	N	Y
65	DK	5.1	4.4	102	108	2+		Y			80	B/L pleaural effusion	Y	N	Y	N	Y
66	HPS	2.9	4.7	114	124	1+					80.94	normal study	N	N	N	N	Y
67	KD	4.5	4.5	106	102	1+					21	normal study	N	N	N	N	Y

Sr. No.	Name					OUTCOME		RFT ON F/U (AT 1 MONTH)					AKIN 1
		ANTIBIOTICS	INOTROPES	HEMODIALYSIS(IF INDICATED)	PLATELETTRANSFUSION	Duration of Stay in Hospital	Improved/DAMA/Expired	Urea (mg/dl)	Creatinine(mg/dl)	S. Sodium(mmol/l)	Potassium (mmol/l)	Chloride(mmol/l)	Final Outcome
45	AS	Y	N	N	N	4	improved	30	1	138	4.5	96	Alive
46	PD	Y	N	N	N	10	improved	18	0.86	139	4.5	97	Alive
47	DD	Y	N	N	N	4	DAMA	78	2.1	136	4.5	98	Alive
48	GS	Y	N	N	N	5	improved	24	0.65	139	4	98	Alive
49	PK	Y	N	N	N	20	improved	40	1	134	4.2	98	Alive
50	JK	Y	N	N	N	10	improved	50	0.9	136	4.4	97	Alive
51	GR	Y	N	N	N	8	DAMA	64	1.02	136	4.7	98	Alive
52	HS	Y	N	N	N	3	improved	26	1	138	4.2	99	Alive
53	RJ	Y	Y	CRRT/SLED	Y	8	expired						expired
54	AS	Y	Y	PD	N	6	expired						expired
55	SS	Y	N	N	N	10	improved	20	1.02	140	4.5	106	Alive
56	SS	Y	N	N	N	7	improved	14	1	136	3.6	118	Alive
57	GS	Y	N	N	N	7	improved	21	1.1	137	4.3	105	Alive
58	KS	Y	Y	SLED	N	8	DAMA	88	2.2	142	5.2	118	Alive
59	DS	Y	N	HD	Y	8	improved	28	0.4	141	4.2	98	Alive
60	R	Y	N	2HD SESSIONS	Y	6	improved	48	1.8	140	4.2	98	Alive
61	TS	Y	N	N	N	8	improved	22	0.8	136	4.2	104	Alive
62	V	Y	N	N	N		improved	20	1.05	136	4.2	104	Alive
63	OP	Y	N	N	N	5	improved	34	1.04	138	4.1	104	Alive
64	RK	Y	N	N	N	12	improved	41	1.02	138	4.2	98	Alive
65	DK	Y	N	N	Y	7	improved	42	0.48	138	4.6	104	Alive
66	HPS	Y	N	N	N	5	improved	14	0.8	138	4.2	106	Alive
67	KD	Y	N	N	N	11	improved	40	1	140	4.4	104	Alive

Sr. No.	Name	Age	Sex	CR No.	DOA	DOD	PRESENTING COMPLAINTS												PAST HISTORY		PERSONAL HISTORY		GENERAL PHYSICAL EXAMINATI		
							Fever		Black Coloured Stools		Decreased Urinary Output		Bleeding from any site		Rash on body		Red Coloured Urine		DM TYPE 2	HTN	Smoking	Alcohol Intake	Pallor	Icterus	Cyanosis
							Y/N	Duration(days)	Y/N	Duration	Y/N	Duration	Y/N	Duration	Y/N	Duration	Y/N	Duration	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N
68	SD	73	F	795013	25/8/19	5-9-19	Y	2	N		Y	2	N		N		N		Y	Y	N	N	N	N	N
69	NK	60	F	823095	4-10-19	10-10-19	Y	3	N		N		N		N		N		Y	N	N	N	N	N	N
70	TS	24	M	820444	30/9/19	5-10-19	Y	2	N		N		N		N		N		N	N	N	N	N	N	N
71	IS	18	M	820327	29/9/19	7-10-19	Y	4	N		N		N		Y	1	N		N	N	N	N	N	N	N
72	JPS	64	M	821946	1-10-19	5-10-19	Y	2	N		N		N		N		N		N	N	N	N	N	N	N
73	KK	60	F	737180	1-10-19	7-10-19	Y	3	N		N		N		N		N		Y	N	N	N	N	N	N
74	SS	53	M	820419	29/9/19	4-10-19	Y	5	N		N		N		N		N		Y	N	N	N	N	N	N
75	GS	40	M	822099	1-10-19	5-10-19	Y	3	N		Y	2	N		Y	1	N		N	N	N	N	N	N	N
76	BR	45	F	821197	30/9/19	5-10-19	Y	1	N		N		N		N		N		N	N	N	N	N	N	N
77	B	45	F	821135	30/9/19	5-10-19	Y	4	N		N		N		N		N		N	N	N	N	N	N	N
78	HS	33	M	910757	4-10-19	8-10-19	Y	7	N		Y	3	N		Y	1	Y	1	N	N	N	N	N	N	N
79	HK	68	F	130909	30/9/19	4-10-19	Y	6	Y	1	N		N		N		N		N	N	N	N	N	N	N
80	KS	72	M	820234	29/9/19	4-10-19	Y	4	N		N		N		Y	3	N		Y	Y	N	N	N	N	N
81	SD	75	F	753656	24/6/19	29/6/19	Y	3	N		Y	2	N		N		N		Y	N	N	N	N	N	N
82	BS	24	M	822537	3-10-19	7-10-19	Y	2	N		N		N		N		N		N	N	N	N	N	N	N
83	JK	61	F	823773	5-10-19	11-10-19	Y	3	N		N		N		N		N		N	N	N	N	N	N	N
84	LS	45	M	824441	6-10-19	12-10-19	Y	2	N		Y	1	N		N		N		N	N	N	N	N	N	N
85	CS	55	M	884451	6-10-19	10-10-19	Y	3	N		N		N		N		N		N	Y	N	N	N	N	N
86	DS	21	M	824488	6-10-19	11-10-19	Y	2	N		N		N		N		N		N	N	N	N	N	N	N

Sr. No.	Name	ON			VITALS					SYSTEMIC EXAMINATION						INVESTIGATIONS				
		Clubbing	JVP	Oedema	SBP	DBP	PULSE	RR	Temperature	Respiratory System	CVS		CNS	Abdomen		Hemoglobin (gm/dl)		TLC (X 103/mm3)		N/L/M/E/B ()
		Y/N	raised/not raised	Y/N						Pulmonary Rales	S1	S2		Splenomegaly	Free Fluid	At Admission	At Discharge	At Admission	At Discharge	At Admission
68	SD	N	Not raised	N	140	90	98	18	102	A	P	P	Normal	A	A	8.5	8.8	13	44	55/31/10/0
69	NK	N	Not raised	N	110	60	70	14	98	A	P	P	Normal	A	A	10.9	10.5	5.9	5.4	57/30/8/2
70	TS	N	Not raised	N	110	70	104	18	101	A	P	P	Normal	A	A	15.1	15	4.5	7	70/16/10/1.4
71	IS	N	Not raised	N	110	70	87	18	100	A	P	P	Normal	A	A	13	12	7	8	74/20/9/0
72	JPS	N	Not raised	N	130	70	90	14	99.4	A	P	P	Normal	A	A	9.6	10	7.6	15	74/20/9/0
73	KK	N	Not raised	N	120	70	88	16	98	A	P	P	Normal	A	A	11	10.6	8	7.4	76/18/9.6/.2
74	SS	N	Not raised	N	140	70	78	14	98	A	P	P	Normal	A	A	10	9.7	8	5.6	73/15/10/.5
75	GS	N	Not raised	N	110	70	89	20	100	P	P	P	Normal	A	P	13	10.8	24	14	55/32/18/.3
76	BR	N	Not raised	N	120	70	77	20	99.4	A	P	P	Normal	A	A	10	9.8	3.4	4.5	79/10/6/.2
77	B	N	Not raised	N	100	60	112	20	102	A	P	P	Normal	A	A	12.4	12.3	7.8	6.7	62/29/4/.6
78	HS	N	Not raised	N	90	40	116	18	101	A	P	P	Normal	A	P	19	14.6	23	9.3	80/8/10/.3
79	HK	N	Not raised	N	130	70	88	18	98	A	P	P	Normal	A	P	10.1	9.2	9.1	8	78/13/7/.4
80	KS	N	Not raised	N	130	80	94	20	101	A	P	P	Normal	A	A	10	9.9	12.5	11	90/12/7/0
81	SD	N	Not raised	N	130	70	88	18	99	A	P	P	Normal	A	A	10.5	9.4	8.6	9.4	72/15/9/3
82	BS	N	Not raised	N	110	70	78	16	98.4	A	P	P	Normal	A	A	12	11.2	10.4	9.6	59/28/8/.2
83	JK	N	Not raised	N	100	60	104	18	101	A	P	P	Normal	A	A	17	16	14	9	74/16/8/.8
84	LS	N	Not raised	N	130	70	96	18	100	A	P	P	Normal	A	A	14	13.9	7	10	82/12/3/1
85	CS	N	Not raised	N	140	90	90	18	99.4	A	P	P	Normal	A	A	14	12.8	19	9	59/29/10/.4
86	DS	N	Not raised	N	120	80	78	16	100	A	P	P	Normal	A	A	13	14	8	8.3	63/24/10/.2

Sr. No.	Name		Platelets		PCV		PTI		INR		RFT Urea (mg/dl)		RFT Creatinine(mg/dl)		RFT S. Sodium(mmol/l)	
		At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge
68	SD	90/40/6/3	104	276	39.1	30	13.4		1.2		148	298	3.8	4.8	139	128
69	NK	55/31/9/2	80	113	38.4	35.2	15		1.3		107	48	2	1	134	141
70	TS	74/14/8/1.2	38	99	35.1	33.9	15.4		1.4		78	29	2.6	1.2	149	138
71	IS	70/18/8/0.2	36	114	47.2	42.6	15		1.41		88	20	2.6	1.1	145	136
72	JPS	90/24/9/0	40	120	46.2	42.3	15		1.39		76	89	3.4	2.1	140	145
73	KK	70/18/9/0	40	86	47.6	40	15		1.4		84	21	2.68	1.1	140	136
74	SS	71/17/10/1	62	105	50.2	45.1	12		1.2		115	62	3.77	1.63	129	137
75	GS	70/12/9/.3	22	54	45.7	36	11.4		1.3		76	60	2.44	1.4	128	135
76	BR	80/12/7/0	20	140	52.7	42.1	12		1.2		151	65	2.29	1.3	145	138
77	B	46/30/7/.8	80	132	46.1	40	16.5		1.51		81	55	3.47	0.96	134	146
78	HS	80/7/10/1	96	130	47.8	42.2	12.4		1.14		50	193	3.96	8	151	149
79	HK	56/327/.6	18	130	58.2	45.3	12.3		1.13		90	32	2.4	1.23	129	135
80	KS	84/16/8/.4	6	58	36.1	32.9	14.2		1.5		114	34	4.5	1.04	124	134
81	SD	78/14/8/2	18	72	38.1	35.2	13.5		1.3		88	60	2.61	2.2	144	141
82	BS	62/26/8/.2	14	110	43	35.3	14		1.3		84	21	2.6	1.32	134	138
83	JK	68/20/10/0	14	145	32.4	30.7	16		1.4		84	20	3.5	0.72	128	132
84	LS	52/31/10/4	23	96	45.2	44.8	13		1.2		92	50	5.3	1.7	135	133
85	CS	62/25/10/.3	28	71	47.6	45.2	12		1.2		99	48	2.3	1.06	124	136
86	DS	65/24/9/.5	40	110	46.2	44.1	12		0.8		99	19	2.4	0.6	131	139

Sr. No.	Name	RFT Potassium(mmol/l)		RFT Chloride (mmol/l)		Urine Routine (proteins)		Urine Routine(RBC'S)		Dengue IgM	Dengue NS1 Ag	USG abdomen (if available)	Capillary leakage	Biopsy	COMPLICATIONS		TREATMENT
		At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Admission	At Admission	Y/N	Y/N	DHF	DSS	IV FLUIDS
68	SD	3.4	6.1	102	118	1+		Y		11.6		minimal ascites,mild B/L pleural effusion	Y	N	Y	N	Y
69	NK	4.9	4.02	101	111	1+					30	normal study	N	N	N	N	Y
70	TS	4.8	4.27	114	102	1+					40	normal study	N	N	N	N	Y
71	IS	4.6	4.2	1.1	96	2+				14		mild hepatosplenomegaly,thick edematous GB wall	N	N	N	N	Y
72	JPS	3.33	4	110	114	1+					130	B/L pleural effusion	Y	N	Y	N	Y
73	KK	4	4.2	100	106	1+					68	mild hepatomegaly with fatty liver grade I	N	N	N	N	Y
74	SS	4.9	3.88	113	108	1+					76	mild ascites	N	N	N	N	Y
75	GS	4.43	4.95	91	101	2+		Y			38	mild ascites,B/L pleural effusion	Y	N	Y	N	Y
76	BR	4.7	4	115	106	1+				18		mild ascites,B/L pleural effusion	Y	N	Y	N	Y
77	B	4.2	3.6	107	117	1+				13		minimal ascites	Y	N	Y	N	Y
78	HS	7.25	8.2	107	111	3+	3+	Y			112	mild ascites,left pleural effusion,fatty liver grade II	Y	N	Y	Y	Y
79	HK	4.56	4.04	92	98	2+		Y		12.4		CLD with hepatic SOL	Y	N	Y	N	Y
80	KS	5.4	4.46	104	97	2+				13		mild ascites	N	N	N	N	Y
81	SD	4.03	4.2	11	104	1+				16		normal study	N	N	N	N	Y
82	BS	4.9	4.5	101	98	1+				13		B/L pleural effusion	Y	N	Y	N	Y
83	JK	5.65	3.8	100	98	1+					55	reactive GB wall edema	N	N	N	N	Y
84	LS	6.1	4.1	104	105					26		normal study	N	N	N	N	Y
85	CS	3.16	3.5	96	106	2+					136	normal study	N	N	N	N	Y
86	DS	5.5	4.6	108	104					34		reactive GB wall edema,minimal ascites	Y	N	N	N	Y

Sr. No.	Name					OUTCOME		RFT ON F/U (AT 1 MONTH)					AKIN 1
		ANTIBIOTICS	INOTROPES	HEMODIALYSIS(IF INDICATED)	PLATELETTRANSFUSION	Duration of Stay in Hospital	Improved/DAMA/Expired	Urea (mg/dl)	Creatinine(mg/dl)	S. Sodium(mmol/l)	Potassium (mmol/l)	Chloride(mmol/l)	Final Outcome
68	SD	Y	N	N	N	10	DAMA						expired
69	NK	Y	N	N	N	6	improved	13	0.8	138	4.4	98	Alive
70	TS	Y	N	N	N	6	improved	18	1	136	4.4	99	Alive
71	IS	Y	N	N	N	9	improved	22	0.8	138	4	98	Alive
72	JPS	Y	N	N	N	5	improved	64	1.1	140	3.6	106	Alive
73	KK	Y	N	N	N	7	improved	20	0.8	140	4.4	99	Alive
74	SS	Y	N	N	N	6	improved	32	1.1	136	3.9	98	Alive
75	GS	Y	N	N	N	5	DAMA	24	0.7	137	4.12	96	Alive
76	BR	Y	N	N	Y	6	improved	33	0.9	136	4.6	98	Alive
77	B	Y	N	N	N	6	improved	32	0.6	138	4.5	99	Alive
78	HS	Y	Y	PD	N	4	expired						expired
79	HK	Y	N	N	Y	5	improved	18	1.1	136	4.26	102	Alive
80	KS	Y	N	N	Y	6	improved	16	0.99	139	4.4	98	Alive
81	SD	Y	N	N	N	5	DAMA	84	2.1	145	4.1	106	Alive
82	BS	Y	N	N	Y	4	improved	23	0.8	138	3.9	96	Alive
83	JK	Y	N	N	Y	6	improved	10	0.6	140	3.9	96	Alive
84	LS	Y	N	N	N	6	improved	28	1	136	4.4	98	Alive
85	CS	Y	N	N	N	5	improved	28	0.6	139	4.1	98	Alive
86	DS	Y	N	N	N	6	improved	17	0.6	144	4.4	106	Alive

Sr. No.	Name	Age	Sex	CR No.	DOA	DOD	PRESENTING COMPLAINTS												PAST HISTORY		PERSONAL HISTORY		GENERAL PHYSICAL EXAMINATI		
							Fever		Black Coloured Stools		Decreased Urinary Output		Bleeding from any site		Rash on body		Red Coloured Urine		DM TYPE 2	HTN	Smoking	Alcohol Intake	Pallor	Icterus	Cyanosis
							Y/N	Duration(days)	Y/N	Duration	Y/N	Duration	Y/N	Duration	Y/N	Duration	Y/N	Duration	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N
87	HS	64	M	825378	7-10-19	13/10/2019	Y	4	N		Y	2	N		Y	2	N		N	Y	N	N	N	N	N
88	GJ	35	M	825743	8-10-19	18/10/19	Y	4	N		Y	1	N		N		N		N	N	N	N	N	N	N
89	MD	66	F	827404	11-10-19	16/10/2019	Y	3	N		N		N		N		N		Y	Y	N	N	N	N	N
90	D	33	M	826455	9-10-19	14/10/2019	Y	3	N		N		N		N		N		N	N	N	N	N	N	N
91	PD	39	M	827209	10-10-19	16/10/2019	Y	5	N		N		N		N		N		N	Y	N	N	N	N	N
92	PK	37	M	827201	10-10-19	14/10/2019	Y	1	N		N		N		N		N		Y	N	N	N	N	N	N
93	AK	25	F	828050	11-10-19	16/10/2019	Y	1	N		N		N		Y	1	N		N	N	N	N	N	N	N
94	AK	53	M	828167	12-10-19	19/10/2019	Y	5	N		N		N		N		N		N	N	N	N	N	N	N
95	DR	60	M	828082	12-10-19	17/10/2019	Y	2	N		N		N		N		N		Y	Y	N	N	N	N	N
96	VK	33	M	827729	11-10-19	17/10/2019	Y	2	N		N		N		N		N		N	N	N	N	N	N	N
97	HPS	21	M	827584	11-10-19	17/10/2019	Y	3	N		N		N		Y	1	N		N	N	N	N	N	N	N
98	ID	43	F	828164	12-10-19	18/10/2019	Y	3	N		N		N		N		N		N	Y	N	N	N	N	N
99	AS	59	M	824123	5-10-19	8-10-19	Y	3	N		Y	2	N		N		N		N	Y	N	N	N	N	N
100	PKS	54	M	827277	10-10-19	17/10/2019	Y	2	N		N		N		N		N		N	N	N	N	N	N	N

Sr. No.	Name	ON			VITALS					SYSTEMIC EXAMINATION						INVESTIGATIONS				
		Clubbing	JVP	Oedema	SBP	DBP	PULSE	RR	Temperature	Respiratory System	CVS		CNS	Abdomen		Hemoglobin (gm/dl)		TLC (X 103/mm3)		N/L/M/E/B ()
		Y/N	raised/not raised	Y/N						Pulmonary Rales	S1	S2		Splenomegaly	Free Fluid	At Admission	At Discharge	At Admission	At Discharge	At Admission
87	HS	N	Not raised	N	90	60	96	20	101	A	P	P	Normal	P	P	13	10	9	14	88/10/.1/.1
88	GJ	N	Not raised	N	130	70	94	16	98	A	P	P	Normal	A	A	13	12	8	9	69/23/6/.4
89	MD	N	Not raised	N	140	90	103	20	101	A	P	P	Normal	A	A	9.6	8.6	9	8	40/45/4/.2
90	D	N	Not raised	N	110	70	88	13	98	A	P	P	Normal	A	A	18	17	3.8	5.6	74/15/9/.1
91	PD	N	Not raised	N	120	80	88	14	101	A	P	P	Normal	A	A	12.4	12	3.7	4.3	52/29/13/.6
92	PK	N	Not raised	N	130	70	94	18	99	A	P	P	Normal	A	A	13	12.7	10	6	43/44/10/.3
93	AK	N	Not raised	N	100	60	73	13	99.8	A	P	P	Normal	A	A	13	11.8	20	9	70/16/8/.3
94	AK	N	Not raised	N	100	60	90	14	98	A	P	P	Normal	A	A	9.6	9	7.6	9.1	69/21/8/.6
95	DR	N	Not raised	N	130	90	84	18	100	A	P	P	Normal	A	A	11	11.5	6.8	5.6	69/22/7/.4
96	VK	N	Not raised	N	130	70	106	19	101	A	P	P	Normal	A	A	13	13	8.8	8	51/38/9/.2
97	HPS	N	Not raised	N	120	80	84	16	98.7	A	P	P	Normal	A	A	13.3	13.7	6.4	5.6	56/32/10/.1
98	ID	N	Not raised	N	140	90	100	18	101	A	P	P	Normal	A	A	12	12.8	5.3	7	45/21/10/.8
99	AS	N	Not raised	N	80	50	104	20	101	P	P	P	Normal	A	P	9.8	8.9	15	16	88/3/6/.8
100	PKS	N	Not raised	N	130	90	93	17	101	A	P	P	Normal	A	A	11.8	11.2	7	8	62/28/6/2

Sr. No.	Name		Platelets		PCV		PTI		INR		RFT Urea (mg/dl)		RFT Creatinine(mg/dl)		RFT S. Sodium(mmol/l)	
		At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge
87	HS	94/11/.1/.8	16	20	48.1	40.1	17.7		1.62		74	128	4.6	8.4	152	150
88	GJ	56/30/7/.2	16	90	42.1	34	12		1.1		258	96	6.2	1.7	139	140
89	MD	34/51/4.8/.1	17	58	39.5	38.4	11		0.9		126	90	3	1.2	129	136
90	D	64/22/12/.2	16	78	45.2	44.1	10		0.9		91	38	2.9	1.1	141	134
91	PD	44/40/10/.9	18	69	47.6	46.2	12		1.3		93	35	2.4	0.6	126	139
92	PK	34/52/10/.3	17	84	38.2	34.1	12		1.1		98	50	2.6	1.2	144	139
93	AK	70/14/0/.2	21	79	47.2	44.3	11		0.9		104	49	2.34	0.9	127	139
94	AK	76/17/17/.4	14	68	38.1	36.7	12.4		1.2		85	38	3.5	1.1	132	138
95	DR	66/23/9/1	50	154	48.2	44.1	9.9		0.9		130	44	4	1.5	131	141
96	VK	52/36/10/0	17	98	36.5	34.2	11		0.9		90	42	2.9	1.13	126	137
97	HPS	47/42/10/.5	20	78	38.2	35.7	12		1.1		84	22	2.4	1	128	137
98	ID	50/43/5/.1	9	50	44.6	45.2	13		1.2		113	40	3	1.2	129	138
99	AS	85/10/3/2	30	83	49.1	38.3	13.3		1.2		182	168	7.4	4.54	130	138
100	PKS	63/26/7/2.2	34	181	47.1	41.2	13		1.14		78	60	2.6	0.7	154	147

Sr. No.	Name	RFT Potassium(mmol/l)		RFT Chloride (mmol/l)		Urine Routine (proteins)		Urine Routine(RBC'S)		Dengue IgM	Dengue NS1 Ag	USG abdomen (if available)	Capillary leakage	Biopsy	COMPLICATIONS		TREATMENT
		At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Admission	At Admission	Y/N	Y/N	DHF	DSS	IV FLUIDS
87	HS	4.9	6.7	101	110	2+		Y			92	reactive GB wall edema,moderate ascites,B/L pleural effusion	Y	N	Y	Y	Y
88	GJ	6.1	3.9	96	103	3+	2+				78	reactive GB wall edema,minimal ascites	Y	Y	Y	N	Y
89	MD	2.77	3.4	108	100	1+				12.8		normal study	N	N	N	N	Y
90	D	4	4.6	104	106	1+					59	minimal ascites	N	N	N	N	Y
91	PD	5	3.8	106	99					18		reactive GB wall edema	N	N	N	N	Y
92	PK	5.1	4.7	106	103	1+				18		reactive GB wall edema,minimal ascites	N	N	N	N	Y
93	AK	5.36	3.9	104	102					20		mild ascites	N	N	N	N	Y
94	AK	5.8	4.2	103	96	1+				20		normal study	N	N	N	N	Y
95	DR	5.6	4	113	109	2+					107	reactive GB wall sludge ,minimal ascites	N	N	N	N	Y
96	VK	3.1	4.5	107	104					22		normal study	N	N	N	N	Y
97	HPS	4.6	4.3	98	101						76	reactive GB wall edema,minimal ascites	N	N	N	N	Y
98	ID	5	4.4	106	98	1+					77	normal study	N	N	N	N	Y
99	AS	6.99	6.3	106	101	3+		Y			70	reactive GB wall edema,moderate ascites,B/Lpleural effusion	Y	N	Y	Y	Y
100	PKS	2.8	3.4	112	110						90	reactive GB wall sludge ,minimal ascites	N	N	N	N	Y

Sr. No.	Name					OUTCOME		RFT ON F/U (AT 1 MONTH)					AKIN 1
		ANTIBIOTICS	INOTROPES	HEMODIALYSIS(IF INDICATED)	PLATELETTRANSFUSION	Duration of Stay in Hospital	Improved/DAMA/Expired	Urea (mg/dl)	Creatinine(mg/dl)	S. Sodium(mmol/l)	Potassium (mmol/l)	Chloride(mmol/l)	Final Outcome
87	HS	Y	Y	CRRT	Y	7	expired						expired
88	GJ	Y	N	2 HD SESSIONS	Y	11	improved	48	0.7	136	4	104	Alive
89	MD	Y	N	N	N	6	improved	50	1	139	4.3	96	Alive
90	D	Y	N	N	Y	6	improved	24	0.9	136	3.7	98	Alive
91	PD	Y	N	N	N	6	improved	18	0.8	140	4	104	Alive
92	PK	Y	N	N	Y	5	improved	28	1.1	136	4.7	107	Alive
93	AK	Y	N	N	N	6	improved	30	1.1	139	4.2	106	Alive
94	AK	Y	N	N	Y	7	improved	18	0.9	136	4.4	98	Alive
95	DR	Y	N	N	N	5	improved	38	1.1	138	4.4	98	Alive
96	VK	Y	N	N	Y	7	improved	35	1.1	137	4.3	97	Alive
97	HPS	Y	N	N	N	7	improved	20	1	138	3.6	96	Alive
98	ID	Y	N	N	Y	6	improved	30	0.9	136	3.8	98	Alive
99	AS	Y	Y	PD	N	4	expired						expired
100	PKS	Y	N	N	N	7	improved	33	0.6	144	4.4	106	Alive

Sr. No.	Name	Age	Sex	CR No.	DOA	DOD	PRESENTING COMPLAINTS												PAST HISTORY		PERSONAL HISTORY		GENERAL PHYSICAL EXAMINATI		
							Fever		Black Coloured Stools		Decreased Urinary Output		Bleeding from any site		Rash on body		Red Coloured Urine		DM TYPE 2	HTN	Smoking	Alcohol Intake	Pallor	Icterus	Cyanosis
							Y/N	Duration(days)	Y/N	Duration	Y/N	Duration	Y/N	Duration	Y/N	Duration	Y/N	Duration	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N

Sr. No.	Name	ON			VITALS					SYSTEMIC EXAMINATION						INVESTIGATIONS				
		Clubbing	JVP	Oedema	SBP	DBP	PULSE	RR	Temperature	Respiratory System	CVS		CNS	Abdomen		Hemoglobin (gm/dl)		TLC (X 103/mm3)		N/L/M/E/B ()
		Y/N	raised/not raised	Y/N						Pulmonary Rales	S1	S2		Splenomegaly	Free Fluid	At Admission	At Discharge	At Admission	At Discharge	At Admission

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Sr. No.	Name		Platelets		PCV		PTI		INR		RFT Urea (mg/dl)		RFT Creatinine(mg/dl)		RFT S. Sodium(mmol/l)	
		At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge

Sr. No.	Name													Biopsy	COMPLICATIONS		TREATMENT
		RFT Potassium(mmol/l)		RFT Chloride (mmol/l)		Urine Routine (proteins)		Urine Routine(RBC'S)		Dengue IgM	Dengue NS1 Ag	USG abdomen (if available)	Capillary leakage		DHF	DSS	IV FLUIDS
		At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Discharge	At Admission	At Admission	At Admission	Y/N	Y/N			

Sr. No.	Name					OUTCOME		RFT ON F/U (AT 1 MONTH)					AKIN 1
		ANTIBIOTICS	INOTROPES	HEMODIALYSIS(IF INDICATED)	PLATELETTRANSFUSION	Duration of Stay in Hospital	Improved/DAMA/Expired	Urea (mg/dl)	Creatinine(mg/dl)	S. Sodium(mmol/l)	Potassium (mmol/l)	Chloride(mmol/l)	Final Outcome

SPECTRUM OF RENAL INVOLVEMENT IN DENGUE FEVER PATIENTS ADMITTED IN TERTIARY CARE CENTRE IN NORTH INDIA

THESIS PROPOSAL

FOR APPROVAL OF SUBJECT OF THESIS TO BE SUBMITTED

IN PARTIAL FULFILMENT OF THE REQUIREMENTS

FOR THE DEGREE OF

DOCTOR OF MEDICINE

IN

MEDICINE

OF THE

BABA FARID UNIVERSITY OF HEALTH SCIENCES
FARIDKOT

October, 2018

DR. RAJNEESH BAINS

DEPARTMENT OF MEDICINE
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ABSTRACT OF PLAN OF THESIS

Title	SPECTRUM OF RENAL INVOLVEMENT IN DENGUE FEVER PATIENTS ADMITTED IN TERTIARY CARE CENTRE IN NORTH INDIA
For the degree of	MD Medicine
Name of the candidate	Dr. Rajneesh Bains
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Co-supervisor	DR. Vikas Makkar, Professor & Head, Department of Nephrology, DMCH, Ludhiana
Institution	Dayanand Medical College & Hospital, Ludhiana
University	Baba Farid University of Health Sciences, Faridkot

Introduction: Renal involvement in Dengue Fever Is associated with prolonged hospital stay, raised morbidity and mortality.In this study, we will be taking into account patients with dengue fever having renal involvement and its impact on outcome in these patients.

Aim of Study: To study Spectrum of Renal Involvement in Dengue Fever patients admitted in tertiary care centre in north India.

Materials & Methods: This will be a prospective study of 1 year from 1/1/19 to 31/12/19 with one month followup on patients with dengue fever having renal involvement admitted in Medicine, Nephro and other allied specialities.

Clinical Significance: Renal involvement in dengue is associated with prolonged hospital stay, raised morbidity and mortality.

Keywords: Dengue fever, Renal involvement

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CERTIFICATE OF FACILITIES AVAILABLE

This is to certify that the facilities for work on the subject of thesis entitled **"SPECTRUM OF RENAL INVOLVEMENT IN DENGUE FEVER PATIENTS ADMITTED IN TERTIARY CARE CENTRE IN NORTH INDIA"** exist in the Department of Medicine, Dayanand Medical College & Hospital, Ludhiana and will be provided to the candidate. We will see that the data being included in the thesis are genuine and is collected by the candidate himself under our supervision and guidance.

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6. BRIEF RESUME OF THE INTENDED WORK

6.1 NEED FOR THE STUDY

Dengue fever is a debilitating viral disease of tropics and subtropics, transmitted by mosquitoes.In terms of its morbidity and mortality, dengue is considered the most important disease among the arthropod-borne viral diseases that affect humans. It is believed that >50 million people residing in tropical areas worldwide are infected with the dengue virus every year and that >2.5 billion people reside in areas in which dengue is endemic. The incidence of dengue has increased 30-fold in the past 50 years, extending into countries that were previously disease free. The disease is transmitted through mosquito bites from female *Ae.aegypti* infected with the virus, which require blood meals to obtain the protein needed for oviposition. This mosquito is a domestic vector with diurnal anthropophilic and zoophilic habits. The virus multiplies inside the mosquito's digestive system then spreads to different tissues. After an extrinsic incubation period of 7–11 days, on average, the virus reaches the mosquito's salivary glands; the period of virus transmission then begins and lasts throughout its lifetime. Climatic conditions such as elevated temperature, rainfall and air humidity, as well as urban structures without adequate sanitation, are factors that contribute to the active dispersion of the mosquito and the dissemination of the various virus serotypes.Acute Renal Failure (RF) is a rare but well recognized complication of Dengue Infection .Renal involvement is an omnios sign and is associated with prolonging hospital stay, raised morbidity and mortality of patients. Most etiologies of renal involvement can be prevented by community and at in hospital levels. Efforts should be focused on minimizing causes of renal

involvement, increasing importance of serial measurements of serum creatinine levels in high risk patients and documenting urine volume in acutely ill patients.Despite myriad improvements in the care of dengue patients, acute kidney injury (AKI) remained least appreciated intricacy of dengue infection. Exiting literature does not provide any information on renal outcomes among dengue patients surviving an episode of AKI.Hence a study is needed to see the spectrum ofrenal involvement in patients of dengue fever.

6.2 REVIEW OF LITERATURE

Dengue fever is a debilitating viral disease of the tropics, transmitted by mosquitoes, and causing sudden fever and acute pains in the joints.

Dengue fever, also known as breakbone fever, is a mosquito-borne infection that can lead to a severe flu-like illness. It is caused by four different viruses and spread by *Aedes*mosquitoes.

Symptoms range from mild to severe. Severe symptoms include dengue shock syndrome (DSS) and dengue hemorrhagic fever (DHF). These usually require hospitalization.

There are currently no vaccines. The best method of prevention is to avoid mosquito bites. Treatment is possible if diagnosis occurs before the patient develops DSS or DHF.

Symptoms can appear up to 7 days after being bitten by the mosquito that carries the virus.

They include:

- aching muscles and joints
- body rash that can disappear and then reappear
- high fever
- intense headache
- pain behind the eyes
- vomiting and feeling nauseous

Symptoms usually disappear after a week, and mild dengue rarely involves serious or fatal complications.

Dengue hemorrhagic fever

At first, symptoms of DHF may be mild, but they gradually worsen within a few days. As well as mild dengue symptoms, there may be signs of internal bleeding.

A person with Dengue hemorrhagic fever may experience:

- bleeding from the mouth, gums, or nose
- clammy skin
- damage to lymph and blood vessels
- internal bleeding, which can lead to black vomit and feces, or stools
- a lower number of platelets in the blood
- sensitive stomach
- small blood spots under the skin
- weak pulse

Without prompt treatment, DHF can be fatal.

Dengue shock syndrome

DSS is a severe form of dengue. It can be fatal.

Apart from symptoms of mild dengue fever, the person may experience:

- intense stomach pain
- disorientation
- sudden hypotension, or a fast drop in blood pressure
- heavy bleeding
- regular vomiting
- blood vessels leaking fluid

Acute renal involvement in Dengue infection is typically associated with hypotension, rhabdomyolysisand hemolysis

Dengue infection (DI) is a tropical illness caused by Dengue virus.[1]

The incidence of Dengue is increasing at estimate of 50 to 100 million cases per annum worldwide.[2] The presentation of Dengue can be a classical Dengue Fever (DF) or Dengue Haemorrhagic Fever (DHF) or Dengue Shock Syndrome (DSS).[3] Acute Renal failure is a rare but well-recognized complication of Dengue, with an incidence which varies from 0.3% to 3.3% in different populations.[4] The presence of comorbid illness like diabetes mellitus, hypertension can have impact on prognosis of DI.[4]

A study was done by Girishpamappavakrani and nambakamtanujasabramanyam.Among 101 patients with confirmed DI(dengue infection), 74 (73.3%) were men and 27(26.7%) were women with a mean age of 31.62±12.62 years. A total of 70 (70.2%) patients had classical Dengue fever, and 31(29.2%) patients had DHF/DSS. RF group with 16 (15.8%) patients was defined as serum creatinine of >1.2mg%. Most common symptoms were fever (100%) followed by headache (82%) and pain in abdomen (75%). Statistically significant ($p<0.001$) bleeding tendency, shock, proteinuria and RF were present more in DHF/DSS than in DF. Analysis by Fisher-exact test revealed that the Dengue fever group had no significant presence of hypertension, diabetes compared with the DHF/DSS group (strongly significant was if $p\leq0.01$). The time from the onset of fever to the detection of fever in DF, DHS and DSS groups did not show a significant difference Among the 16 patients with Renal failure, all patients had recovery from renal failure.. The patients with DHF/DSS were more susceptible to develop renal failure compared to Denue fever group (62% versus 38%). There were statistically significant higher frequencies of renal failure, haemoconcentration, thrombocytopenia, low serum cholesterol in DHF/DSS

group. Raised transaminases, raised LDH level were noted in the DHF/DSS group compared with Dengue fever, however, there was no significant difference in frequency of other mentioned symptoms/signs and parameters like serum bilirubin, serum electrolytes, prothrombin time, APTT between Dengue fever and DHF/DSS in the patients with RF. Patients in the Renal failure group also had significantly higher percentages of shock, haemoconcentration, thrombocytopenia, raised AST and low serum cholesterol .There were no mortality and none of them had to receive renal replacement therapy during hospitalization.[5]

Laoprasopwattana et al.[6] reported an incidence of 0.9% among children in Thailand, and Lee et al.[7] reported an incidence of 3.3% among adults in Taiwan. In a Brazilian intensive care unit for infectious diseases, dengue was the cause of 4% of the cases of AKI diagnosed using the risk, injury, failure, loss of kidney function and end-stage acute kidney disease (RIFLE) criteria.[8] In a more recent study that employed the Acute Kidney Injury Network (AKIN) criteria for diagnosis, the incidence of AKI was 10.8%.[9] Using the AKIN criteria in a retrospective analysis, Khalil et al.[10] identified AKI in 13.3% of a series of patients with dengue confirmed by the presence of IgM antibodies, independent of the severity of disease; 64.8% of the patients were in Stage 1, 18.3% Stage 2 and 16.9% Stage 3 of the disease. In another study, the RIFLE classification was used to investigate the occurrence of AKI in patients with tropical acute febrile disease. The results showed that the incidence of AKI among patients with dengue upon admission to the hospital was 35.7%.[11]

Retrospective studies of case series of dengue have shown that the development of AKI was associated with a longer hospital stay and higher mortality.[12-14]

The limited data available on the kidney histology in dengue fever-induced AKI include tubular abnormalities such as acute tubular necrosis, thrombotic microangiopathy and acute glomerulopathy.[15-16]

Several mechanisms have been proposed to account for the etiopathogenesis of dengue fever-induced AKI, including direct action by the virus, hemodynamic instability, rhabdomyolysis, hemolysis and acute glomerular injury. While none of the available evidence patently favors any such mechanisms at the expense of the others, often two or more mechanisms coexist simultaneously in the same patient.

Another study (retrospective)done in Taiwan by Mei-ChuanKuo, on impact of Renal Failure on the Outcome of Dengue Viral Infection.In this study,From January 2002 to January 2003, 519 dengue-infected patients were enrolled, including 412 patients with classical dengue fever (DF) and 107 patients with dengue hemorrhagic fever (DHF)/dengue shock syndrome (DSS). Twelve patients died in this outbreak, and all had DHF/DSS. Twenty-one (4.0%) patients were defined as being in the RF group. The RF group had a higher mortality rate than non-RF group (28.6 versus 1.2%; $P < 0.001$). The severity of GFR impairment was associated with higher percentages of DHF/DSS (P 0.029) and mortality ($P < 0.001$). Differences in symptoms/signs and laboratory abnormalities between DF and DHF/DSS were significant in the non-RF group but not apparent in the RF group.

AKI in dengue infection has favorable outcomes but 10 - 20% of patients may further require dialysis after AKI.17 Most of the studies, included in current review, lack post-discharge follow-up among AKI patients. AKI can directly cause End-Stage Renal Disease (ESRD) and increase the risk of developing incident of Chronic Kidney Disease (CKD) and worsening of underlying CKD.18Morphological changes in glomeruli may lead to CKD19 and it has been already proposed that dengue virus causes such type of changes in glomerulus.20 So far, no study objectively described any association of DAKI with CKD, though Laoprasopwattana et al.21 followed-up 9 patients with DAKI after discharge and found no development of CKD in them. Additionally, serum creatinine levels returned to normal during median 32 days in these patients.214 Dengue induced AKI - usually severe AKI - sometimes requires dialysis that has proved to be beneficial,22,21,23 though further studies are needed to optimize dialysis in dengue patients when it is needed.

6.3 AIMS AND OBJECTIVES OF THE STUDY

To study the Spectrum of Renal Involvement in Dengue Fever Patients.

7. MATERIALS AND METHODS

This will be a prospective study of 1 year from 1/1/2019 to 31/12/19 with one month followup on patients admitted with dengue fever having renal involvement.Patients will be followed up for one month for change in renal function tests and outcome of renal involvement in Dengue fever patients will be evaluated .

7.1 Source of Data

A prospective study of duration 1 year with one month followup on patients developing renal complications in diagnosed cases of dengue fever.Patients will be followed up for one month for change in Renal function tests.. Patients with rise in serum creatinine of > 0.3 MG /DL,decreased urine output,will be included in study from 1/1/19 to31/12/19 after obtaining an informed consent,detailed history,general physical examination and required blood,urine analysis will be done

7.2 METHOD OF COLLECTION OF DATA

Patients admitted in Dayanand Medical College and Hospital,Ludhiana,Punjab under Medicine,Nephro and other allied specialtiesfor more than 48 hours having dengue positive developing rise in serum creatinine levels or decrease in urine volume will be included in study after obtaining informed consent.Patients will be followed up for one month for evaluating Renal Function Tests

INCLUSION CRITERIA:

- NS1 AG positive ORdengue serology +ve(IgM)
- Urine R/E S/O proteinuria or RBC'S or rise in spot protein –creatinine ratio (If indicated)

- Absolute increase in serum creatinine of >0.3 mg /dl within 48 hours, or
- Urine volume <0.5 ml /kg/hr for 6 hours

EXCLUSION CRITERIA:

- Patient already on hemodialysis
- Already diagnosed cases of Chronic kidney disease

OUTCOME

To study Renal functions at time of discharge, effect of renal involvement in morbidity and mortality of Dengue fever patients. Patients will be followed up for 1 month for evaluating renal function test.

STATISTICAL ANALYSIS

Data will be described in terms of range; mean ±standard deviation (± SD), median, frequencies (number of cases) and relative frequencies (percentages) as appropriate. All statistical calculations will be done using SPSS (Statistical Package for the Social Science) SPSS 21 version statistical program for Microsoft Windows

7.3 DOES THE STUDY REQUIRE ANY INVESTIGATIONS OR INTERVENTIONS TO BE CONDUCTED ON PATIENTS OR OTHER HUMANS OR ANIMALS? IF SO, PLEASE DESCRIBE BRIEFLY.

Yes, Complete Hemogram, Renal Function Tests, Dengue IGM, Dengue NS1 Ag, USG Abdomen (if indicated),Urine for Protein to Creatinine Ratio (if indicated)

7.4 HAS ETHICAL CLEARANCE BEEN OBTAINED FROM YOUR INSTITUTION IN CASE OF 7.3?

Attached along with

LIST OF REFERENCES

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PROFORMA

S.No:

Name:

Age: Sex:

Admission No: CR No:

Address:

Occupation:

Date of Admission: Date of Discharge:

Contact no:

Presenting Complaints:

Sr .No.	Complaint	Yes/ No	Duration
1.	Fever		
2.	Black Coloured Stools		
3.	Decreased Urinary Output		
4.	Bleeding from any site		
5	Rash on body		
6	Red colored urine		
7			
8			

Signature of Candidate

Signature of Supervisor

t: YES /NO • Past history of any major illness: (any co morbid conditions)

o Known case of Chronic kidney Disease

• Personal History:

o Smoking : - Yes/ no

o Alcohol intake: - Yes / no

o Iv drug abuse - Yes/ no

EXAMINATION:

General Physical Examination:

Pallor	Icterus	Cyanosis	Clubbing
JVP	Oedema	Lymphadenopathy	

Vitals:

BP-

HR-

RR-

Temperature-

Systemic Examination:

Respiratory System -

CVS -

CNS -

P/A -

Signature of Candidate **Signature of Supervisor**

INVESTIGATIONS:

	At admission	At discharge
Hb		
TLC		
DLC		
Platelets		
PTI/INR		
Urea		
Creatinine		
S. Sodium		
Potassium		
Chloride		
Urine routine		
Dengue IgM		
Dengue NS1 Ag		
USG abdomen (if indicated)		
Protein to Creatinine Ratio(if indicated)		

Signature of Candidate

Signature of Supervisor

Any Other Investigations

COMPLICATIONS:

TREATMENT:

Outcome :

Duration of stay in hospital ☐

Improved ☐

DAMA ☐

Expired ☐

On Followup Investigations:

Investigations	**After one month followup**
Urea	
Creatinine	
S. Sodium	
Potassium	
Chloride	

Signature of Candidate

Signature of Supervisor

INFORMED PATIENT CONSENT

Date: _____

I.....D/o, W/o, S/o.....

am willing to participate in the study **"SPECTRUM OF RENAL INVOLVEMENT IN DENGUE FEVER PATIENTS ADMITTED IN TERTIARY CARE CENTRE IN NORTH INDIA"** The procedure with its complications has been explained to me in local vernacular language. I have fully understood that no special tests and extra expenditure in any form, merely for the purpose of thesis is being carried out. I am free to opt out the study any time without assigning any reason.

....

Signature of the Witness Signature of the patient

Name:

Signature of Candidate **Signature of Supervisor**

मरीज अनुमति फार्म

तिथि _____

मैं _____ पत्नी/पुत्र/पुत्री _____

निवासी _____

इस शोधकार्य "**SPECTRUM OF RENAL INVOLVEMENT IN DENGUE FEVER PATIENTS ADMITTED IN TERTIARY CARE CENTRE IN NORTH INDIA**" में भाग लेने के लिए सहमत हूँ। मैं इस शोधकार्य में भाग लेने के लिए अपनी स्वेच्छा से तैयार हूँ। मैं पुष्टि करता/करती हूँ की यह स्वीकृति देने के लिए मुझे कोई आर्थिक प्रलोभन नहीं दिया गया और न ही दबाव डाला गया है। मुझे इस शोधकार्य का उद्देश्य स्पष्ट कर दिया गया है और मुझे यह विश्वास है की यह विज्ञान और मानवता के लाभ के लिए है। मुझे इस शोधकार्य में होने वाले जोखिम के बारे में समझा दिया गया है और मेरी समझ में यह जोखिम बहुत मामुली है।

मैं इस शोधकार्य में भाग लेने के सम्बन्ध में किसी भी समय अपनी अस्वीकृति व्यक्त कर सकता/सकती हूँ और मेरे अस्वीकृति व्यक्त करने का मेरे इलाज पर कोई प्रभाव नहीं पड़ेगा।

_____ _____

गवाह के हस्ताक्षर रोगी के हस्ताक्षर/अंगूठे का निशान

नाम: नाम:

_____

अन्वेषक के हस्ताक्षर

_____

विद्यार्थी के हस्ताक्षर

ਮਰੀਜ਼ ਰਜ਼ਾਮੰਦੀ ਫਾਰਮ

ਮਿਤੀ_____

ਮੈ_____ਪਤਨੀ/ਪੁੱਤਰ/ਪੁੱਤਰੀ_____

ਵਾਸੀ _____

"SPECTRUM OF RENAL INVOLVEMENT IN DENGUE FEVER PATIENTS ADMITTED IN TERTIARY CARE CENTRE IN NORTH INDIA" ਤੇ ਚਲ ਰਹੀ ਖੋਜ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਰਜ਼ਾਮੰਦ ਹਾਂ। ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਮੈ ਆਪਣੀ ਮਰਜ਼ੀ ਨਾਲ ਤਿਆਰ ਹਾਂ। ਮੈ ਇਹ ਦਸਣਾ ਚਾਹੁੰਦਾ ਹਾਂ/ ਚਾਹੁੰਦੀ ਹਾਂ ਕੇ ਇਹ ਰਜ਼ਾਮੰਦੀ ਦੇਣ ਵਾਸਤੇ ਮੈਨੂ ਕਿਸੇ ਵੀ ਤਰਾਂ ਦਾ ਲੋਭ-ਲਾਲਚ ਨਹੀ ਦਿੱਤਾ ਗਿਆ ਅਤੇ ਨਾ ਹੀ ਕੋਈ ਦਬਾ ਪਾਇਆ ਗਿਆ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਦਾ ਮਨੋਰਥ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ ਅਤੇ ਮੈਨੂ ਇਹ ਭਰੋਸਾ ਦਵਾਇਆ ਗਿਆ ਹੈ ਕੇ ਇਹ ਖੋਜ ਵਿਗਿਆਨ ਅਤੇ ਮਾਨਵਤਾ ਦੀ ਭਲਾਈ ਲਈ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਵਿਚ ਹੋਣ ਵਾਲੇ ਖਤਰੇ ਬਾਰੇ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ ਅਤੇ ਮੈਨੂ ਇਹ ਯਕੀਨ ਹੈ ਕੇ ਇਹ ਖਤਰਾ ਬਹੁਤ ਮਾਮੂਲੀ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਦਾ ਢੰਗ – ਤਰੀਕਾ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ।

ਮੈ ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਬਾਰੇ ਆਪਣੀ ਰਜ਼ਾਮੰਦੀ ਕਿਸੇ ਵੀ ਸਮੇ ਵਾਪਸ ਲੈ ਸਕਦਾ ਹਾਂ/ ਸਕਦੀ ਹਾਂ ਅਤੇ ਮੇਰੀ ਰਜ਼ਾਮੰਦੀ ਵਾਪਸ ਲੈਣ ਦਾ ਮੇਰੇ ਇਲਾਜ ਤੇ ਕੋਈ ਅਸਰ ਨਹੀ ਹੋਵੇਗਾ।

_____ _____

ਗਵਾਹ ਦੇ ਹਸਤਾਖਰ ਮਰੀਜ਼ ਦੇ ਹਸਤਾਖਰ

ਮਿਤੀ_____ ਮਿਤੀ_____

ਪਤਾ _____ ਪਤਾ _____

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ਨਿਰੀਖਕ ਦੇ ਹਸਤਾਖਰ

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ਸਿਖਿਆਰਥੀ ਦੇ ਹਸਤਾਖਰ

ਮਰੀਜ਼ ਰਜ਼ਾਮੰਦੀ ਫਾਰਮ

ਮਿਤੀ_____

ਮੈ_____ਪਤਨੀ/ਪੁੱਤਰ/ਪੁੱਤਰੀ_____

ਵਾਸੀ _____

"SPECTRUM OF RENAL INVOLVEMENT IN DENGUE FEVER PATIENTS ADMITTED IN TERTIARY CARE CENTRE IN NORTH INDIA" ਤੇ ਚਲ ਰਹੀ ਖੋਜ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਰਜ਼ਾਮੰਦ ਹਾਂ। ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਮੈ ਆਪਣੀ ਮਰਜ਼ੀ ਨਾਲ ਤਿਆਰ ਹਾਂ। ਮੈ ਇਹ ਦਸਣਾ ਚਾਹੁੰਦਾ ਹਾਂ/ ਚਾਹੁੰਦੀ ਹਾਂ ਕੇ ਇਹ ਰਜ਼ਾਮੰਦੀ ਦੇਣ ਵਾਸਤੇ ਮੈਨੂ ਕਿਸੇ ਵੀ ਤਰਾਂ ਦਾ ਲੋਭ-ਲਾਲਚ ਨਹੀ ਦਿੱਤਾ ਗਿਆ ਅਤੇ ਨਾ ਹੀ ਕੋਈ ਦਬਾ ਪਾਇਆ ਗਿਆ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਦਾ ਮਨੋਰਥ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ ਅਤੇ ਮੈਨੂ ਇਹ ਭਰੋਸਾ ਦਵਾਇਆ ਗਿਆ ਹੈ ਕੇ ਇਹ ਖੋਜ ਵਿਗਿਆਨ ਅਤੇ ਮਾਨਵਤਾ ਦੀ ਭਲਾਈ ਲਈ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਵਿਚ ਹੋਣ ਵਾਲੇ ਖਤਰੇ ਬਾਰੇ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ ਅਤੇ ਮੈਨੂ ਇਹ ਯਕੀਨ ਹੈ ਕੇ ਇਹ ਖਤਰਾ ਬਹੁਤ ਮਾਮੂਲੀ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਦਾ ਢੰਗ – ਤਰੀਕਾ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ।

ਮੈ ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਬਾਰੇ ਆਪਣੀ ਰਜ਼ਾਮੰਦੀ ਕਿਸੇ ਵੀ ਸਮੇ ਵਾਪਸ ਲੈ ਸਕਦਾ ਹਾਂ/ ਸਕਦੀ ਹਾਂ ਅਤੇ ਮੇਰੀ ਰਜ਼ਾਮੰਦੀ ਵਾਪਸ ਲੈਣ ਦਾ ਮੇਰੇ ਇਲਾਜ ਤੇ ਕੋਈ ਅਸਰ ਨਹੀ ਹੋਵੇਗਾ।

_____ _____

ਗਵਾਹ ਦੇ ਹਸਤਾਖਰ ਮਰੀਜ਼ ਦੇ ਹਸਤਾਖਰ

ਮਿਤੀ_____ ਮਿਤੀ_____

ਪਤਾ _____ ਪਤਾ _____

_____

ਨਿਰੀਖਕ ਦੇ ਹਸਤਾਖਰ

_____

ਸਿਖਿਆਰਥੀ ਦੇ ਹਸਤਾਖਰ